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NINTH ANNUAL REPORT

OF THE

BUREAU OF LABOR STATISTICS

OF THE

STATE OF MISSOURI,

FOR THE

YEAR ENDING NOVEMBER 5, 1887.



JEFFERSON CITY, MO.:

TRIBUNE PRINTING COMPANY, STATE PRINTERS AND BINDERS.

1887.

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LETTER OF TRANSMITTAL.

OFFICE OF COMMISSIONER OF LABOR STATISTICS AND INSPECTION,
CITY OF JEFFERSON, November 5, 1887. }

HON. JOHN S. MARMADUKE, *Governor* :

SIR: In compliance with the law, I herewith submit the Ninth Annual Report of the operations of this Bureau for the year ending November 5, 1887.

Very respectfully,

O. KOCHTITZKY,
Commissioner.

PREFATORY.

Some difficulties, necessarily abridging the scope and intent of this report, have been encountered as a result of the change in the law, which requires the report to be made to the Governor, November 5th, instead of January 1st, as formerly, thus limiting the time of its preparation nearly two months this year. This change in the law will ultimately, however, have a good effect, insuring an earlier publication and distribution, and at the biennial sessions the laying of the report in printed form before the Legislature in time for intelligent action upon its suggestions by that body.

Another change from the former law has not yet produced the good results anticipated. We allude to that part of the present law requiring manufacturing and other corporate bodies employing manual labor to make annual reports to this Bureau. This provision has been largely neglected, wilfully probably in some cases, and ignorantly undoubtedly in many cases—the proprietors of the establishments not being aware of the enactment. To call their attention to the law we have issued circular letters attached to the proper forms for reports and sent these generally throughout the State.

As a general thing we find employers greatly reluctant to make report of the details of their business, *i. e.*, the condition of their establishments, number of employes, wages paid, hours of labor, etc. We find employes equally reluctant to give needed information. This results from a mutual mistrust of employer and employe which, during these latter years of agitation, has rather increased than diminished. It is easy to trace this unhealthy condition of things to the intemperate zeal and utterances of professional agitators, who have inculcated the idea among workingmen that all employers are petty tyrants whose only consideration is to obtain the most labor for the least money, and among employers that their hired men are their natural enemies,

unsympathetic, vindictive, and ready to take advantage of any stress or misfortune that may befall them in business. The very best efforts of economists and humanitarians are set at naught by these extreme agitators, who for an inscrutable purpose proclaim the servitude of labor and the tyranny of capital, and inculcate the internal antipathy of employe and employer. As an antidote for this disease various schemes of co-operation are recommended. Where the system has been thoroughly tried it has generally worked well, but this remedy is only a partial one, for co-operation can never become universal and find its way into every industrial enterprise. It is good so far as it goes, but with it adjuncts must be found before every vestige of unrest and distrust disappears.

Practical experiments in co-operative business are of infinitely more service to the workingmen than theoretical discussions resulting in utopias and mental disorders. The abolition of poverty; the creation of universal wealth; the abrogation of all social and economic distinctions, and the total absence of toil and suffering are beautiful dreams that can have no substantial basis or fruition in this practical age. Agrarianism is a chimera, or, if it were practical, worse, a disaster. No man is a true friend to the workingman, or to anybody else for that matter, who would break down the incentive to labor—the acquisition of home, comforts, luxuries. Labor is the inheritance of humanity ordained from the foundation of the world. Its compensations are rest, education and social comforts. No man can change the divine order. And the difference after all is unimportant as between him who wears out his muscle at the forge, or his brain at the ledger or in the literary workshop. Envy and covetousness are, when subjected to close analysis, primary causes of discontent, but are most reluctantly admitted. No man who scowls at the passing occupant of a luxuriant carriage, or casts a sinister glance at the gleaming lights that stream from the windows of the brown-stone front, but secretly wishes for similar luxuries. On the other hand, the flaunting display of wealth and too frequent hauteur it begets, incite the latent devil that is in us, and vanity becomes as reprehensible for its consequences as envy and covetousness for their selfishness. Our conclusion is that the true philosopher is not the man who teaches the lesson of hate, and develops the baser passions of revenge and prejudice, but he who teaches the mutual dependence of men, the necessity of a kindly and reciprocal feeling between the employe and the employer. Generally speaking, those who write most and speak most volubly on the relations between labor and capital omit entirely the simple philosophy of mutual confi-

dence, respect and sympathy, and indulge in the mysticisms and impracticable vagaries that end in radical socialism.

Singular as it may appear, we have learned that arbitration, as a means of settling differences, is not greatly desired by the masses of workingmen, or rather, by those who assume to speak for them. A peaceable settlement, we regret to say, seems not so much to be desired as a victory of force. Of this subject we will speak more fully in another place.

There have been but few disturbances and labor strikes in this State since our last report, and these have been of short duration, and not of a serious character. In this respect Missouri is to be congratulated over many of her sister States. The lesson of the great strike of 1886, and its consequent defeat, has not been without its good effects, inasmuch as it has taught that an unjust cause, even when backed up by great numbers, can rarely succeed. To insure the success of any cause requires an outspoken public sentiment in its favor. This can never be obtained for the wrong or for a trivial and inadequate purpose.

The disturbances among the coal miners at Bevier, we are convinced, are the result of a peculiar social condition there existing, the disturbing faction being largely composed of a foreign element, non-assimilating and exclusive in its character. We are not prepared to say that the prospective replacement of these men with exclusive negro labor will result in much improvement. The substitution of affiliating, intelligent foreign and industrious native miners would produce better results.

The creation of the office of State Mine Inspector, by the Thirty-fourth General Assembly, was intended to give more efficiency to the inspection of mines than under the old system of County Inspectors. The incumbent of this new office has had but a few months in which to visit and inspect the numerous mines of the State, but from the time of his appointment has been actively at work, the result of which is seen in his report to this Bureau, and herewith submitted. The next report will have an entire year for its preparation, and we hope will be the most elaborate exposition of our mineral resources yet presented to the public.

Various public spirited gentlemen have notably contributed to the formation of an office mineral cabinet, and we desire to make our special acknowledgments to Mr. M. S. Mesplay, of Jasper county, for a very valuable and complete collection of zinc and lead ores from the southwestern counties.

Your Commissioner in person attended the National Convention of Chiefs of Labor Bureaus, held at Madison, Wisconsin, last May. The chief object of these National Conventions is for the comparison of views looking to the enlargement of the efficiency of State Bureaus, and the better education of the laboring classes. In a measure this object is being accomplished.

ARBITRATION.

From intercourse with many intelligent workingmen throughout the State, and after active labor in the attempt to settle disputes and differences peaceably between employers and employes, this Bureau became convinced that the masses of the workingmen, and professedly their orators and champions, desired legal arbitration for the redress of their grievances. From the first we doubted the success of such a method, but could see no objection to giving it a fair trial as an experiment.

The difficulty heretofore of getting employers and employes together for an amicable settlement of differences in cases where the latter were represented by the officials of labor organizations, lay in the fact that there could be no binding contract entered into. As a fundamental principle of law it takes two to make a contract. Employers, acting as a corporation, were able to contract; but the employes having no corporate existence, could not legally enter into contracts. They could neither sue, in an aggregate capacity, to enforce a contract, nor be sued for the violation. The plain way out of this difficulty was manifestly the incorporation of our trades unions under the law. Such corporations are rare, and curiously enough, are objected to by many workingmen, because of the pecuniary responsibility consequent thereon. It was evident that a causeless strike, for instance, resulting in loss to the employer, would entail upon the organization so ordering and directing it, suits for damages. There is a manifest reluctance on the part of labor organizations to assume such a legal responsibility, and the fact has not tended to increase the confidence of employers in their treaties or professions.

To restore the labor organizations to confidence and to put them upon a plane with other associations organized for social and business

purposes, the last General Assembly of Missouri manifested its willingness to enact any sort of equitable arbitration laws that might be desired by the laboring men and trades unions. A bill was introduced and referred to a committee composed of gentlemen elected by laboring constituencies and to whom were entrusted their interests. This committee perfected the bill and it passed the preliminaries of legislative detail, but was defeated in its final passage by the opposition of the labor representatives themselves. Their opposition to the measure was necessarily fatal, because the General Assembly was not disposed to pass any bill that the representatives of the laboring classes opposed, although originated and reported by them. The inconsistency of this action ended the efforts at direct legislation in the Thirty-fourth General Assembly. The bill itself might have been objectionable in many ways and doubtless was, but why was not something better proposed? If the clamor for arbitration laws was sincere, it is curious that with a numerous, direct representation in the General Assembly, and a friendly disposition manifested by all others to aid them in their legislation, no effort was made to enact arbitration laws. But notwithstanding this unaccountable neglect, this Bureau still believes that the just and honest laboring men of the State desire and need some simple and cheap tribunal for the binding settlement of their differences with their employers.

The State of New York, in 1886, created a Board of Arbitration, the first annual report of which gives the result of the practical workings of the system. After enumerating the strikes and other difficulties it was instrumental in amicably adjusting, it reaches the following conclusions:

The experience of six months proves conclusively that the theory and letter of the law, which contemplate commencement by and working up from a local body below, constituted voluntarily by mutual agreement of the parties at issue, and appeal to an established body above, will not, under the conditions that exist in this State, however successfully they might operate elsewhere, reach the end desired and objects declared in the title of the act to authorize a State Board of Arbitration, for the amicable adjustment of grievances and disputes that may arise between employers and employes. Parties to a dispute that requires arbitration for settlement, are found in too many instances so far apart, so full of feeling, and so hostile, that they will not, of their own motion, come together and choose members of a local tribunal to whose judgment they will be willing to submit. The simple fact, that notwithstanding publication and commendation of the law by the press, and the distribution among employers and employes of twenty thousand circulars calling attention to its provisions, together with twenty thousand copies of a thirty-two page pamphlet, presenting the views of many recognized authorities on questions of capital and labor, commanding arbitration as the best means of settling disagreements in the

various fields of industry (see Appendix), not a single case, in accordance with the letter of the act, has been reported, would seem to be sufficient to settle that point. On the other hand the working of the board, in reverse order, without the law, and clothed with only the prestige of having been created by the State for purposes of arbitration, has accomplished much. The services of the board, whether called or tendered, have in all cases and by all parties, been received with courtesy and consideration, and where accepted the decisions have been respected. The invariable disposition has been to allow matters to go directly to the State board for arbitration, rather than to a board of local selection.

There are good reasons for the belief that the mere existence of a means, representing the sovereign will and wish of the State, for a settlement of labor grievances and disputes, without regard to methods prescribed, has had a good moral effect in restraining dispositions on the one hand to exact too much of employes, and on the other to strike without justifying cause against employers. Unless feeling sure of ability to make a fair showing of right, neither side in a dispute is likely to desire investigation by an entirely disinterested body. Cases of strikes have occurred where one side has made formal offer to the other for submission to arbitration by the board, and compromise and settlement have followed without calling it into service. In some of these cases evidences are not wanting to clearly indicate that but for the invocation of the State's authority, protracted struggles would have ensued before settlements could be reached.

From what has been observed, belief is warranted that mediation, in the name and by the authority of the State, at the outset of a difficulty, is, in some cases and in many respects, more important than arbitration, after a difficulty has grown to large proportions or reached the final division stage.

The conclusion is, therefore, reached, and, in compliance with requirement, suggestion is made that chapter 410 of the laws of 1886 be so amended so as to make the board one of both mediation and arbitration; that it be vested with powers of original jurisdiction and action in all cases of grievances and disputes between employers and employes that may come to its knowledge, so as to be able to initiate and supervise any means of settlement that shall in its judgment seem best adapted to the end in view, and may be most agreeable to the parties at issue, whether it be direct reference to and decision by the board, or a local board or other agency; and that in all such cases, whether arbitration follows or not, it shall have warrant as a body, or through any one of its members or its secretary, to make investigation, take testimony, etc., as provided in the act as it stands.

Acting upon the experience and suggestions of the State Board of Arbitration, the legislature of New York last March (1887), enacted the following law, which is herewith reproduced that it may serve as a guide for future legislation in this State:

AN ACT to provide for the amicable adjustment of grievances and disputes that may arise between employers and employees, and to authorize the creation of a State Board of Mediation and Arbitration.

[Passed March 10, 1887; three-fifths being present].

The People of the State of New York, Represented in Senate and Assembly, do enact as follows:

SECTION 1. Whenever any grievance or dispute of any nature shall arise between any employer and his employes, it shall be lawful to submit the same, in writing, to a board of arbitrators for hearing and settlement. Said board shall consist of three persons. When the employes concerned are members in good standing of any labor organization, which is represented by one or more delegates in a central body, the said body shall have power to designate one of said arbitrators, and the employer shall have power to designate one other of said arbitrators, and the said two arbitrators shall designate a third person, as arbitrator, who shall be chairman of the board. In case the employes concerned in any grievance or dispute are members in good standing of a labor organization which is not represented in a central body, then the organization of which they are members shall have the power to select and designate one arbitrator for said board, and said board shall be organized as hereinbefore provided. And in case the employes concerned in any grievance or dispute are not members of any labor organization, then a majority of said employes, at a meeting duly held for that purpose, shall designate one arbitrator for said board, and the said board shall be organized as hereinbefore provided. In all cases of arbitration the grievance or matter of dispute shall be succinctly and clearly stated in writing, signed by the parties to the arbitration or some duly authorized person on their behalf, and submitted to such board of arbitration.

SEC. 2. Each arbitrator so selected shall sign a contract to act as such, and shall take and subscribe an oath before an officer authorized to administer oaths, to faithfully and impartially discharge his duties as an arbitrator, which consent and oath may be filed in the office of the clerk of the county where such dispute arises. When the said board is ready for the transaction of business it shall select one of its number to act as secretary, and the parties to the dispute shall receive notice of a time and place of hearing. The chairman shall have power to administer oaths and to issue subpœnas for the production of books and papers, and for the attendance of witnesses, to the same extent that such power is possessed by the courts of record or the judges thereof in this State. The board may make and enforce the rules for its government and the transaction of the business before it, and fix its sessions and adjournment, and shall hear and examine such witnesses as may be brought before the board, and such other proof as may be given relative to the matter in dispute.

SEC. 3. After the matter has been fully heard, the said board, or a majority of its members, shall within ten days render a decision thereon, in writing, signed by them, giving such details as will clearly show the nature of the decision and the points disposed of. Such decisions shall be a settlement of the matter referred to said arbitrators unless an appeal is taken therefrom as in hereinafter provided. The decision shall be in duplicate, one copy of which shall be filed in

the office of the clerk of the county, and the other transmitted to the secretary of the State Board of Mediation and Arbitration, hereinafter mentioned, together with the testimony taken before said board.

SEC. 4. When the said board shall have rendered its decision its power shall cease, unless there may be in existence at the time other similar grievances or disputes between the same classes of persons, and in such cases such persons may submit their differences to the said board, which shall have power to act, and arbitrate and decide upon the same as fully as if said board was originally created for the settlement of such other difference or differences.

SEC. 5. Within three days after the passage of this act the Governor shall, with the advice and consent of the Senate, appoint a State Board of Mediation and Arbitration, to consist of three competent persons, each of whom shall hold his office for the term of three years, to commence immediately upon the expiration of the term of office of the present State Board of Arbitration, created under chapter four hundred and ten of the laws of one thousand eight hundred and eighty-six. One of said persons shall be selected from the party which at the last general election cast the greatest number of votes for Governor of this State, and one of said persons shall be selected from the party which at the last general election cast the next greatest number of votes for governor of this State; and the other of said persons shall be selected from a *bona fide* labor organization of this State. If any vacancy happens by resignation or otherwise, he shall in the same manner appoint an arbitrator for the residue of the term. If the Senate shall not be in session at the time any vacancy shall occur or exist, the Governor shall appoint an arbitrator to fill the vacancy, subject to the approval of the Senate when convened. Said board shall have a clerk or secretary who shall be appointed by the board to serve three years, whose duty it shall be to keep a full and faithful record of the proceedings of the board, and also all documents and testimony forwarded by the local boards of arbitration, and perform such other duties as the board may prescribe. It shall have power under the direction of the board, to issue subpœnas, to administer oaths in all cases before said board, to call for and examine books, papers and documents of any parties to the controversy, with the same authority to enforce their production as is possessed by the courts of record or the judges thereof, in this State. Said arbitrators and clerk shall take and subscribe the constitutional oath of office, and be sworn to the due and faithful performance of the duties of their respective offices before entering upon the discharge of the same. An office shall be set apart in the capitol by the person or persons having charge thereof, for the proper and convenient transaction of the business of said board.

SEC. 6. An appeal may be taken from the decision of any local board of arbitration within ten days after the rendition and filing of such decision. It shall be the duty of said Board of Mediation and Arbitration, to hear and consider appeals from the decisions of local boards, and promptly proceed to the investigation of such cases, and the decision of said board thereon shall be final and conclusive in the premises upon both parties to the arbitration. Such decision shall be in writing, and a copy thereof shall be furnished to each party. Any two of the arbitrators shall constitute a quorum for the transaction of business, and may hold meetings at any time or place within the State. Examinations or investigations ordered by the board may be held and

taken by and before any one of their number, if so directed. But the proceedings and decisions of any single arbitrator shall not be deemed conclusive until approved by the board or a majority thereof. Each arbitrator shall have power to administer oaths.

SEC. 7. Whenever any grievance or dispute of any nature shall arise between any employer and his employes, it shall be lawful for the parties to submit the same directly to said State board in the first instance, in case such parties elect to do so, and shall jointly notify said board or its clerk, in writing, of said election. Whenever such notification to said board or its clerk is given, it shall be the duty of said board to proceed, with as little delay as possible, to the locality of such grievance or dispute, and inquire into the cause or causes of grievance or dispute. The parties to the grievance or dispute shall thereupon submit to said board, in writing, succinctly, clearly and in detail, their grievances and complaints, and the cause or causes thereof, and severally agree in writing, to submit to the said board as to matters so submitted, and a promise or agreement to continue on in business or at work, without a lock-out or strike until the decision of said board, provided it shall be rendered within ten days after the completion of the investigation. The board shall thereupon proceed to fully investigate and inquire into the matters in controversy, and to take testimony under oath in relation thereto, and shall have power by its chairman or clerk to administer oaths, to issue subpœnas for the attendance of witnesses, the production of books and papers, to the same extent as such power is possessed by court of record or the judges thereof, in this State.

SEC. 8. After the matter has been fully heard, the said board, or a majority of its members, shall within ten days, render a decision thereon in writing, signed by them or a majority of them, stating such details as will clearly show the nature of the decision and the points disposed of by them. The decision shall be in triplicate, one copy of which shall be filed by the clerk of the board in the clerk's office of the county where the controversy arose, and one copy shall be served on each of the parties to the controversy.

SEC. 9. Whenever a strike or lock-out shall occur, or is seriously threatened in any part of the State, and shall come to the knowledge of the board, it shall be its duty, and it is hereby directed to proceed, as soon as practicable, to the locality of such strike or lock-out and put themselves in communication with the parties to the controversy, and endeavor by mediation to effect an amicable settlement of such controversy; and if in their judgment it is deemed best, to inquire into the cause or causes of the controversy, and to that end the board is hereby authorized to subpœna witnesses, compel their attendance, and send for persons and papers, in like manner and with the same powers as it is authorized to do by section seven of this act.

SEC. 10. The fees of witnesses shall be fifty cents for each day's attendance, and four cents per mile travelled by the nearest route in getting to or returning from the place where attendance is required by the board. All subpœnas shall be signed by the secretary of the board and may be served by any person of full age authorized by the board to serve the same.

SEC. 11. Said board shall make a yearly report to the legislature, and shall include therein such statements, facts and explanations as will disclose the actual working of the board, and such suggestions as to legislation, as may seem to them conducive to harmonizing the re-

lations of and disputes between employers and the wage-earning masses, and the improvement of the present system of production.

SEC. 12. Each arbitrator shall be entitled to an annual salary of three thousand dollars, payable in quarterly installments from the treasury of the State. The clerk or secretary shall receive an annual salary of two thousand dollars, payable in like manner.

SEC. 13. Whenever the term "employer" or "employers" is used in this act it shall be held to include "firm," "joint stock association," "company," or "corporation," as fully as if each of the last named terms was expressed in each place.

SEC. 14. This act shall take effect immediately.

STATE MINE INSPECTOR.

The Thirty-fourth General Assembly passed an act, approved March 30, 1887, which radically changed the existing manner of inspecting mines, by creating the office of State Mine Inspector, and requiring the inspection of all mines. Heretofore this inspection was confined to coal mines, and was done by County Mine Inspectors appointed by the county courts. Under this system, salaries being inconsequential, many counties neglected to make appointments or frequently appointed incompetent or neglectful inspectors, and, as a consequence, the coal mines were but partially inspected, while lead and zinc mines, possibly the greatest of our mining industries, were not inspected and reported upon at all. It was to remedy this omission and imperfection that the following law was enacted:

SECTION 1. The act providing for the health and safety of persons employed in coal mines, and providing for the inspection of same, approved March 23, 1881; also, the act entitled "an act to amend section one (1) of the act of 1881" entitled 'an act providing for the health and safety of persons employed in coal mines, and providing for the inspection of same,'" approved March 20, 1885, are hereby repealed.

SEC. 2. The owner, agent or operator of each and every mine in this State, employing ten or more men, shall make, or cause to be made, at the discretion of the inspector or other person acting in that capacity, an accurate map or plan of the workings of such mine, and of each and every vein or deposit thereof, showing the general inclination of the strata, together with any material deflections in the said workings, and the boundry lines of said mine, and deposit a true copy of said maps or plan with the clerk of the county court of each county wherein may be located the said mine; which said map or plan shall be so filed or deposited within three months after the time when this act shall take effect; and a copy of such map or plan shall also be kept for inspection at the office of the said mine, and during the month of January of each and every year, after this act shall have taken effect, the said owner, agent or operator shall furnish the inspector and clerk of the county court as aforesaid, with a sworn statement, and a further map or plan of the progress of the workings of such mine, continued from last report to the end of the month of December next preceding, and the inspector shall correct his map or plan of said workings in accord

ance with the statement and map or plan thus furnished; and when any mine is worked out or abandoned, that fact shall be reported to the inspector, and the map or plan of such mine in the office of the clerk of the county court shall be carefully corrected and verified.

SEC. 3. Whenever the owner, agent or operator of any mine shall neglect, fail or refuse to furnish the said inspector and clerk as aforesaid with a statement, the map or plan or addition thereto, as provided in the second section of this act, at the time and in the manner therein provided, the said inspector is hereby authorized to cause an accurate map or plan of the workings of such mine to be made at the expense of the said owner, agent or operator, and the cost thereof may be recovered by law from said owner, agent or operator, in the same manner as other debts, by suit in the name of the inspector and for his use.

SEC. 4. In all mines that are or have been in operation prior to the first day of January, 1887, and which are worked by or through a shaft, slope or drift, if there is not already an escapement shaft to each and every said mine, or communications between each and every mine, and some other contiguous mine, then there shall be an escapement shaft or other communication, such as shall be approved by the mine inspector, making at least two distinct means of ingress and egress for all persons employed or permitted to work in such coal mine. Such escapement shaft or other communication with a contiguous mine aforesaid, shall be constructed in connection with every vein or stratum of coal or mineral worked in such a mine, and the time to be allowed for such construction shall be one year when such mine is under one hundred (100) feet in depth; two years when such mine is over one hundred (100) feet and under three hundred (300) feet, and three years when it is over three hundred (300) and under four hundred (400) feet, and four years when it is over four hundred (400) feet in depth, and five years for all mines over five hundred (500) feet, from the time this act goes into effect; and in all cases where the working force of one mine has been driven up to or into the workings of another mine, the respective owners of such mine while operating the same shall keep open a roadway at least two and one-half feet high and four feet wide, thereby forming a communication as contemplated in this act, and for a failure to do so shall be subject to the penalty provided for in section 11 of this act, for each and every day such roadway is unnecessarily closed; each and every such escapement shaft shall be separated from the main shaft by such extent of natural strata as shall secure safety to the men employed in such mines; such distances to be left to the discretion and judgment of the mine inspector or person acting in that capacity, and in all coal mines that shall go into operation for the first time after the first day of January, 1888, such an escapement or other communication with a contiguous mine as aforesaid, shall be constructed within one year after such mine shall have been put into operation. And it shall not be lawful for the owner, agent or operator of any such mine as aforesaid, to employ any person to work therein, or permit any person to go therein for the purpose of working, except such persons as may be necessary to construct such an escapement shaft, unless the requirements of this section shall have first been complied with; and the term "owner" used in this act shall mean the im-

mediate proprietor, lessee, or occupant of any mine or any part thereof, and the term "agent" shall mean any person having, on behalf of the owner, the care or management of any mine or any part thereof: provided, nothing in this section shall be construed to extend the time allowed by law for constructing escapement shafts.

SEC. 5. The owner, agent or operator of every mine, whether operated by shaft, slope or drift, shall provide and maintain for every such mine a sufficient amount of ventilation, to be determined by the inspector, at the rate of one hundred cubic feet of air per man per minute, measured at the foot of the downcast, which shall be forced and circulated to the face of every working place throughout the mine, so that said mine shall be free from standing gas of whatsoever kind, and in all mines where fire-damp is generated, every working place where such fire-damp is known to exist shall be examined every morning with a safety lamp by a competent person before any other persons are allowed to enter. The ventilation required by this section may be produced by any suitable appliances, but in case a furnace shall be used for ventilating purposes, it shall be built in such a manner as to prevent the communication of fire to any part of the works, by lining the upcast with incombustible material for a sufficient distance up from said furnace.

SEC. 6. The owner, agent or operator shall provide that bore-holes shall be kept twenty feet in advance of the face of each and every working place, and, if necessary, on both sides when driving towards an abandoned mine or part of a mine, suspected to contain inflammable gases, or to be inundated with water.

SEC. 7. The owner, agent or operator of every mine operated by shaft shall provide suitable means of signaling between the bottom and the top thereof; and shall also provide safe means of hoisting and lowering persons in a cage covered with boiler iron, so as to keep safe, as far as possible, persons descending into and ascending out of said shaft; and such cage shall be furnished with guides to conduct it on slides through such a shaft, with a sufficient brake on every drum to prevent accident in case of the giving out or breaking of machinery; and such cage shall be furnished with spring-catches, intended and provided so far as possible, to prevent the consequences of cable breaking or the loosening or disconnecting of the machinery; and no props or rails shall be lowered in a cage while men are descending into or ascending out of said mine: provided, that the provisions of this section in relation to covering cages with boiler iron, shall not apply to mines less than one hundred (100) feet in depth where the coal or other mineral is raised by horse power. No male person under the age of twelve (12) years, or female of any age shall be permitted to enter any mine to work therein; nor shall any boy under the age of fourteen years, unless he can read and write, be allowed to work in any mine. Any party or person neglecting or refusing to perform the duties required to be performed by sections 5, 6, 7, 8 and 9, shall be deemed guilty of a misdemeanor, and punished by fine in the discretion of the court trying the same; subject, however, to the limitations as provided by section 11 of this act.

SEC. 8. No owner, agent or operator of any mine operated by shaft or slope, shall place in charge of any engine whereby men are lowered into or hoisted out of the mines, any but an experienced, competent and sober person not under eighteen years of age; and no per-

son shall be permitted to ride upon a loaded cage or wagon used for hoisting purposes in any shaft or slope; and in no case shall more than twelve persons ride on any cage or car at one time, nor shall any mineral be hoisted out of any mine while persons are descending into such mine; and the number of persons to ascend out of or descend into any mine on one cage, shall be determined by the inspector; the maximum number so fixed, shall not be less than four nor more than twelve, nor shall be lowered or hoisted more rapidly than five hundred (500) feet to the minute.

SEC. 9. All boilers used in generating steam in and about mines, shall be kept in good order, and the owner, agent or operator as aforesaid shall have the said boilers examined and inspected by hydrostatic pressure and warm water by a competent boiler-maker or other qualified person as often as once every six months and the result of every such examination shall be certified in writing to the mine inspector; and each and every landing on a level and above the surface of the ground, and the entrance to each and every intermediate working vein, shall be securely fenced by a gate and a "bonnet," so prepared to cover and protect such shaft and entrances thereto; and the entrance to every abandoned slope, air or other shaft shall be securely fenced off; and every steam boiler shall be provided with a proper steam gauge, water gauge and safety valve, and all under-ground, self-acting or engine planes or gangways on which cars are drawn and persons travel, shall be provided with some proper means of signaling between the stopping place and the end of said planes or gangways, and sufficient places of refuge at the side of such planes or gangways shall be provided at intervals of not more than twenty feet apart.

SEC. 10. Whenever loss of life or serious personal injury shall occur by reason of any explosion or of any accident whatsoever in or about any mine, it shall be the duty of the person having charge of such mine to report the facts thereof, without delay to the mine inspector, and if any person is killed thereby to notify the coroner of the county also, or in his absence or inability to act, to any justice of the peace of said county, and the said inspector shall, if he deem it necessary from the facts reported, immediately go to the scene of said accident and make suggestions and render such assistance as he may deem necessary for the safety of the men; and the inspector shall investigate and ascertain the cause of such explosion or accident, and make a report thereof, which he shall preserve with the other records of his office; and to enable him to make such investigation, he shall have the power to take depositions, compel the attendance of witnesses and administer oaths or affirmations to them, and the cost of such investigation shall be paid by the county court of the county in which such accident shall have occurred, in the same manner as costs of coroner's inquests are now paid, and a failure on the part of the person having charge of any mine in which any such accident may have occurred to give notice to the inspector or coroner, as provided for in this section, shall subject such person to a fine of not less than one hundred nor more than three hundred dollars, to be recovered of him in the name of the State of Missouri, before any justice of the peace of such county wherein the mine is situated and the accident occurred, and such a fine, when collected, shall be paid into the county treasury for the use and benefit of the said county.

SEC. 11. In all cases in which punishment is not provided for by fine under this act for a breach of any of its provisions, the fine for the

first offense shall not be less than fifty nor more than two hundred dollars, and for the second offense not less than two hundred nor more five hundred dollars, to be recovered in any court of the State having competent jurisdiction.

SEC. 12. Upon the recommendation of a board of examiners, to be appointed by the Commissioner of Labor Statistics and Inspection, to consist of two practical miners, two operators and one mining engineer, the Governor shall appoint an inspector of mines, who shall serve for two years, and shall have a practicable mining experience, but not be interested in any mine, and shall receive a salary of \$1,800 per annum. He shall have his office in the office of the Commissioner of Labor Statistics, and when not inspecting mines act as a clerk in said office, giving his whole time to the State; said inspector shall visit and inspect personally all mines in the State at least twice within each and every year, and shall receive his actual expenses while so engaged, to be approved by the Commissioner of Labor and audited as other contingent expenses are.

SEC. 13. The inspector provided for in this act shall see that every necessary precaution is taken to insure the health and safety of the workmen employed in any of the mines in the State; that the provisions and requirements provided for in this act be faithfully observed and obeyed, and the penalties of the law enforced. He shall also collect and tabulate in his report, to be made to the Bureau of Labor Statistics, on the 15th day of October of each year, the extent of workable mining lands in this State, by counties; also, the manner of mining, whether by shaft, slope or drift, the number of mines in operation, the number of men employed therein, the amount of capital invested and the amount of mineral, coal, etc., produced.

SEC. 14. There is hereby appropriated, out of the money not otherwise appropriated, for the execution of the duties provided for in this act, the sum of \$4,000.

SEC. 15. It shall be lawful for the inspector provided for in this act to enter, examine and inspect any and all mines and machinery belonging thereto, at all reasonable times, by day or by night, but so as not to obstruct or hinder the necessary workings of such mine, and the owner, agent or operator of every such mine is hereby required to furnish all necessary facilities for entering such examination and inspection; and if the said owner, agent or operator aforesaid, shall refuse to permit such inspection, or to furnish the necessary facilities for such entry, examination and inspection, the inspector shall file his affidavit, setting forth such refusal before the judge of circuit court in said county in which said mine is situated, either during the term of the court or during vacation, and obtain an order on such owner, agent or operator so refusing as aforesaid, commanding him to permit and furnish such facilities for the inspection of such mine, or to be adjudged to stand in contempt of court, and punished accordingly; and if the said inspector shall, after examination of any mine and the works and machinery pertaining thereto, find the same to be worked contrary to the provisions of this act, or unsafe for the workmen therein employed, said inspector shall, through the circuit attorney of his county, or any attorney in case of his refusal to act, acting in the name and on behalf of the State, proceed against the owner, agent or operator of such mine, either separately or collectively, by injunction, without bond, after giving at least two days' notice to such owner, agent or operator; and said

owner, agent or operator shall have the right to appear before the judge, to whom application is made, who shall hear the same on affidavits, and such other testimony as may be offered in support, as well as in opposition thereto; and if sufficient cause appear, the court, or judge in vacation, by order, shall prohibit the further working of any such mine in which persons may be unsafely employed, contrary to the provisions of this act, until the same shall have been made safe, and the requirements of this act shall have been complied with; and the court shall award such costs, in the matter of said injunction, as may be just, but any such proceedings, so commenced, shall be without prejudice to any other remedy permitted by law for enforcing the provisions of this act.

SEC. 16. For any injury to persons or property occasioned by any wilful violations of this act, or wilful failure to comply with any of its provisions, a right of action shall accrue to the party injured for any direct damages sustained thereby; and in case of loss of life, by reason of such wilful violation or wilful failure as aforesaid, a right of action shall accrue to the widow of the person so killed, his lineal heirs or adopted children, or to any person or persons who were, before such loss of life, dependent for support on the person or persons so killed, for a like recovery of damages sustained by reason of such loss of life or lives.

SEC. 17. Any miner, workman or other person who shall knowingly injure any water gauge, barometer, air-course or brattice, or shall obstruct or throw open any air-ways, or carry any lighted lamps or matches into places that are worked by the light of safety lamps, or shall handle or disturb any part of the machinery of the hoisting engine, or open a door to a mine and not have the same closed again, whereby danger is produced, either to the mine or those at work therein, or who shall enter into any part of the mine against caution, or who shall disobey any order given in pursuance of this act, or who shall do any wilful act whereby the lives and health of persons working in the mine, or the security of the mine or miners, or the machinery thereof is endangered, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by fine or imprisonment at the discretion of the court.

SEC. 18. The owner, agent or operator of any mine shall keep a sufficient supply of timber, when required, to be used as props, so that the workmen may, at all times, be able to properly secure the said workings from caving in; and it shall be the duty of the owner, agent or operator to send down all such props when required.

[SEC. 19. All acts or parts of acts inconsistent with this act are and the same are hereby repealed.]

SEC. 20. The necessity for securing to the people of this State the benefits of this act at as early date as practicable, creates an emergency in the meaning of the Constitution of the State; therefore, this act shall take effect and be in force from and after its passage.

Approved March 30, 1887.

In accordance with the provisions of the law above quoted the Commissioner of this Bureau appointed a board of examiners, composed of the following named gentlemen: Mine operators, Hon. Chas. H. Morgan, Barton county, and Col. John S. Elliott, Cooper county;

practical miners, Andrew Hoy, of Randolph county, and James Long, of Washington county; and as mining engineer, Prof. Arthur Thacher, of Washington University, St. Louis.

Public notice was given by advertisements in various papers in different parts of the State that the board of examiners would convene at the office of the Commissioner of Labor Statistics and Inspection in Jefferson City, on Wednesday, June 1, 1887, for the purpose of examining applicants for the office of Mine Inspector. Upon the assembling and organizing of the board, fourteen gentlemen applying were examined, and Mr. Marshall Lee Wolfe, of Bates county, was elected and duly nominated for the office, and immediately commissioned and at once entered upon the discharge of his duties.

The time in which to inspect and report was limited (four months), and the vast area the Mine Inspector and assistant had to traverse, and the great number of mines to inspect, necessarily makes his report, herewith submitted, somewhat incomplete, but of great interest and value nevertheless.

In his work he has been assisted, through his own and the contingent funds of this Bureau, by Mr. W. S. Messplay, of Jasper county, one of the most experienced and accomplished gentlemen in the State in the theory and practice of lead and zinc mining, whose efficient work speaks for itself, and justifies the most candid acknowledgment on the part of this Bureau.

The present laws upon our Statutes, having been enacted solely with reference to the mining of coal, have been found impracticable in this application to lead and zinc mining, and have created some confusion and apprehension among the operators of such mines, but the laws have been construed liberally and not harshly enforced except with regard to the health and safety of operatives.

We will note with care the specific defects of the present laws, and with the assistance of practical lead and zinc mine owners and operatives, this Bureau will draft and recommend to the next General Assembly a bill that will remedy present faults and be just and equitable to all.

The result of the brief work of the mining department of this Bureau we present in this report, though crude and imperfect because of want of time, must literally "open the eyes" of our legislators to the magnitude of the mining industries of the State, and be of incalculable value in advertising our resources in this specialty alone.

MANUFACTURING INDUSTRIES.

MANUFACTURING INDUSTRIES.

In the succeeding pages we give a tolerably correct average of the number of employes, wages paid, hours of labor, amount of goods manufactured, etc., in some of our leading manufacturing industries of Missouri. These averages are arrived at by selecting for use a few of the most complete reports sent us of each character of business, taking neither the largest nor the smallest, but the intermediate concerns as a basis. This, we believe, will be more satisfactory and more correct than making a general average from reports sent to us by establishments employing men by scores and others by twos and threes.

These figures are fairly representative and will serve for comparison with the same character of statistics for other States.

By a review of our former reports we are able to make the gratifying assertion that the showing of Missouri as relates to wages, etc., is still better than that of most of the States, not taking into consideration that the cost of living here is the minimum for western States.

MANUFACTURERS OF AWNINGS, TENTS, ETC.

		NUMBER OF EMPLOYES.	
Skilled—			
Males			7
Females			2
Total			9
Unskilled—			
Males			2
Females			2
Total			4
Under 14 years old—			
Males			
Females			
Total			
Aggregate			13
		WORKING TIME.	
Hours per diem			10
Hours per week			60
Weeks per annum			26

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Male.	Females.	Remarks.
Blacksmith.....	\$12 00		
Cutter.....	15 00		
Fitter	15 00		
"	10 00		
Assistants	9 00		
Sewers.....	6 00	\$5 00	

Value of goods manufactured yearly.....	\$5,500 00
Number of weeks in operation.....	26
Value of raw material used yearly.....	\$2,500 00
Cost of building and grounds.....	rented.
Cost of machinery and repairs.....	\$240 00
Amount paid yearly for rent, taxes and insurance.....	1,120 00

MANUFACTURERS OF BASKETS, ETC.

		NUMBER OF EMPLOYES.	
Skilled—			
Males			5
Females.....			
Total			5
Unskilled—			
Males			15
Females.....			
Total			15
Under 14 years old—			
Males			4
Females.....			
Total			4
Aggregate.....			24
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			48

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Operating machinery.....	5	.....	\$2 00
Helpers.....	6	.....	\$1 25 to \$1 50
Basket makers.....	13	.....	All piece work.

Value of goods manufactured yearly.....	\$18,000 00
Number of weeks in operation.....	48
Value of raw material used yearly.....	\$4,000 00
Cost of building and grounds.....	2,000 00
Cost of machinery and repairs.....	14,000 00
Amount paid yearly for rent, taxes and insurance.....	500 00

BAG MANUFACTURING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	30
Females .....	.....	30
Total .....	.....	60
Unskilled—		
Males .....	.....	25
Females .....	.....	40
Total .....	.....	65
Under 14 years old—		
Males .....	.....
Females .....	.....
Total .....	.....
Aggregate .....	.....	125
WORKING TIME.		
Hours per diem .....	.....	10
Hours per week .....	.....	60
Weeks per annum .....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Printers	\$1 15	.....
Sewers .....	.....	\$0.60	
Counters .....	.....	0.50	
Turners .....	.....	0.45	
Curters	1 00	.....
Engineers	2 50	.....

Value of goods manufactured yearly	\$750,000 00
Number of weeks in operation	52
Value of raw material used yearly	
Cost of buildings and grounds	\$50,000 00
Cost of machinery and repairs	10,000 00
Amount paid yearly for rent, taxes and insurance	5,000 00

BAKERY.

NUMBER OF EMPLOYES.		
Skilled—		
Males .....	.....	3
Females.....	.....
Total.....	.....	3
Unskilled—		
Males.....	.....	3
Females.....	.....
Total.....	.....	3
Under 14 years old—		
Males.....	.....
Females.....	.....
Total.....	.....
Aggregate.....	.....	6
WORKING TIME.		
Hours per diem.....	.....	12
Hours per week.....	.....	72
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foreman	\$2 50	.....
Second hands.....	2 17	.....
Helpers.....	67	.....

Value of goods manufactured yearly.....	\$12,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$3,500 00
Cost of building and grounds.....	12,000 00
Cost of machinery and repairs.....	1,500 00
Amount paid yearly for rent, taxes and insurance.....	1,180 00

BAKERY AND CANDY MANUFACTORY.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		4
Females.....		
Total.....		4
Unskilled—		
Males.....		8
Females.....		8
Total.....		16
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		20
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		70
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Foreman	\$15 00	.....
Skilled.....	10 00	.....
Helpers.....	10 00	\$8 00	

Value of goods manufactured yearly.....	\$150,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$110,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	15,000 00
Amount paid yearly for rent, taxes and insurance.....	3,500 00

BAKERY AND MANUFACTURERS OF CANDY.

NUMBER OF EMPLOYES.	
Skilled—	
Males.....	20
Females.....	
Total.....	20
Unskilled—	
Males.....	40
Females.....	20
Total.....	60
Under 14 years old—	
Males.....	
Females.....	
Total.....	
Aggregate.....	80
WORKING TIME.	
Hours per diem.....	8 to 10
Hours per week.....	48 to 60
Weeks per annum.....	50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Piece work: Males make from \$7.50 to \$25.00 per week; females, from \$4.00 to \$9.00 per week.

Value of goods manufactured yearly.....	\$200,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$145,000 00
Cost of building and grounds.....	Rented.
Cost of Machinery and repairs.....	10,000 00
Amount paid yearly for rent, taxes and insurance.....	4,000 00

MANUFACTURE OF PAPER BOXES.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		4
Females.....		17
Total.....		21
Unskilled—		
Males.....		2
Females.....		10
Total.....		12
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		33
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Cutters.....	\$9 00		
Box coverers		\$5 00	
Unskilled.....	3 00	3 00	.

Value of goods manufactured yearly.....	\$10,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	2,700 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	500 00
Amount paid yearly for rent, taxes and insurance.....	400 00

MANUFACTURING OF PACKING BOXES.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	21
Females .....	.....
Total .....	.....	21
Unskilled—		
Males .....	.....	12
Females .....	.....
Total .....	.....	12
Under 14 years old—		
Males .....	.....
Females .....	.....
Total .....	.....
Aggregate .....	.....	33
WORKING TIME.		
Hours per diem .....	.....	10
Hours per week .....	.....	60
Weeks per annum .....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foreman	\$2 66 ²	.....
Engineer	2 50	.....
Sawers.....	\$2 00 to \$2 25	.....
*Box makers.....	.....	.....
Drivers	2 00	.....
Common laborers.....	\$1 50 to \$1 75	.....

* Piece work—average, \$2.25.

Value of goods manufactured yearly	\$60,000 00
Number of weeks in operation	52
Value of raw material used yearly	\$30,000 00
Cost of building and grounds.....	17,000 00
Cost of machinery and repairs.....	12,000 00
Amount paid yearly for rent, taxes and insurance.....	1,500 00

GENERAL REMARKS.

Half of the hands belonging to the Knights of Labor. As the union men had not the power to control the shop, a steady fighting was kept up.

MANUFACTURE OF PAPER BOXES.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	2
Females.....	.....	10
Total .....	.....	12
Unskilled—		
Males.....	.....	2
Females.....	.....	2
Total .....	.....	4
Under 14 years old—		
Males .....	.....
Females.....	.....
Total .....	.....
Aggregate .....	.....	16
WORKING TIME.		
Hours per diem.....	.....	8—10
Hours per week.....	.....	48—60
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Good skilled girls earn from 75 cents \$1.25 per day. Boys from \$3.00 to \$6.25 per week.

Value of goods manufactured yearly	\$9,000 00
Number of weeks in operation	52
Value of raw material used yearly	\$6,000 00
Cost of building and grounds.....	Rent.
Cost of machinery and repairs.....	\$400 00
Amount paid yearly for rent, taxes and insurance.....	\$45 00

BLANK BOOK AND PAPER BOX MANUFACTORY.

		NUMBER OF EMPLOYES.	
Skilled—			
Males		7	
Females.....		6	
Total		13	
Unskilled—			
Males		3	
Females.....		2	
Total		5	
Under 14 years old—			
Males		—	
Females.....		—	
Total		—	
Aggregate.....		18	
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	*Females	Remarks.
Printers	\$17 00	.....
Pressmen.....	10 00	.....
Feeders.....	5 00	.....
Book binders.....	18 00	.....
Rulers.....	16 00	.....
Box makers.....	15 00	.....

* Girls work by piece—average from \$4.00 to \$5.00 per week.

Value of good manufactured yearly.....	\$20,000 00
Number of weeks in operation.....	51
Value of raw material used yearly.....	\$4,000 00
Cost of building and grounds.....	—
Cost of machinery and repairs.....	12,000 00
Amount paid yearly for rent, taxes and insurance.....	1,000 00

BRICK MAKERS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			30
Females.....			
Total			30
Unskilled—			
Males.....			
Females.....			
Total			
Under 14 years old—			
Males.....			3
Females.....			
Total			3
Aggregate.....			33
WORKING TIME.			
Hours per diem.....			7
Hours per week.....			4½
Weeks per annum.....			29

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Burners.....	\$4 00		
Brick pitchers.....	2 25		
Stickers.....	2 50		
Common laborers	2 00		

Value of goods manufactured yearly.....	\$22,000 00
Number of weeks in operation.....	29
Value of raw material used yearly.....	
Cost of building and grounds.....	\$5,000 00
Cost of machinery and repairs.....	2,000 00
Amount paid yearly for rent, taxes and insurance.....	600 00

BRICK MAKING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males		42
Females.....		
Total		42
Unskilled—		
Males		32
Females.....		
Total		32
Under 14 years old—		
Males		8
Females.....		
Total		8
Aggregate.....		82
WORKING TIME.		
Hours per diem.....		8
Hours per week.....		5
Weeks per annum.....		38

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Burners	\$3 50	.....
Brick makers	2 25	.....
Common laborers.....	2 00	.....
Boys.....	1 25	.....

Value of goods manufactured yearly.....		\$41,000 00
Number of weeks in operation.....		38
Value of raw material use yearly.....		\$7,500 00
Cost of building and grounds.....		
Cost of machinery and repairs.....		3,750 00
Amount paid yearly for rent, taxes and insurance.....		800 00

MANUFACTURE OF BROOMS.

NUMBER OF EMPLOYEES.	
Skilled—	
Males.....	2
Females.....	3
Total.....	5
Unskilled—	
Males.....	4
Females.....	2
Total.....	6
Under 14 years old—	
Males.....	3
Females.....	
Total.....	3
Aggregate.....	14
WORKING TIME.	
Hours per diem.....	10
Hours per week.....	60
Weeks per annum.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Broom-making: All piece work; pay 60 cents per dozen; two workers will average about 4 dozen per day, or about \$1.20 per day.

Value of goods manufactured yearly.....	\$5,800 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	800 00
Cost of building and grounds.....	300 00
Cost of machinery and repairs.....	120 00
Amount paid yearly for rent, taxes and insurance.....	

BEER BREWING.

NUMBER OF EMPLOYES.	
Skilled—	
Males	40
Females.....	
Total.....	40
Unskilled—	
Males	38
Females.....	
Total.....	38
Under 14 years old—	
Males	
Females.....	
Total,.....	
Aggregate.....	78
WORKING TIME.	
Hours per diem.....	10
Hours per week (including two hours Sunday).....	62
Weeks per annum.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Brewers \$65.00 to \$75.00 per month; unprofessionals, \$55.00 per month.

Value of goods manufactured yearly.....	\$540,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	200,000 00
Cost of building and grounds.....	600,000 00
Cost of machinery and repairs.....	110,000 00
Amount paid yearly for rent, taxes and insurance.....	7,000 00

BREWING OF LAGER BEER.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		27
Females.....		
Total.....		27
Unskilled—		
Males.....		29
Females.....		
Total.....		29
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		56
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER MONTH.

Avocations.	Males.	Females.	Remarks.
Engineers.....	\$75.00 to \$115.00		
Brewers.....	55.00 to 70.00		
Bookkeepers.....	75.00 to 125.00		
Firemen.....	65.00		
Stablemen.....	60.00		
Drivers.....	65.00 to 70.00		

Value of goods manufactured yearly.....	\$400,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	100,000 00
Cost of building and grounds.....	150,000 00
Cost of machinery and repairs.....	50,000 00
Amount paid yearly for rent, taxes and insurance.....	8,000 00

LAGER BEER BREWERY.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		50
Females.....		
Total.....		50
Unskilled—		
Males.....		20
Females.....		
Total.....		20
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		70
WORKING TIME.		
Hours per diem.....		10
Hours per week (including three hours Sunday).....		63
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Engineers.....	\$3 00		
Foreman.....	2 50		
Drivers.....	2 25		
Brewers.....	2 00		
Malters.....	2 00		
Common laborers.....	1 75		
Paid for cooperage.....			\$25,000 00 per year.

Value of goods manufactured yearly	\$250,000 00
Number of weeks in operation	52
Value of raw material used yearly	96,000 00
Cost of building and grounds.....	250,000 00
Cost of machinery and repairs.....	95,000 00
Amount paid yearly for rent, taxes and insurance.....	65,000 00

BREWERY.

NUMBER OF EMPLOYEES.		
Skilled—		34
Males.....		
Females.....		
Total.....		34
Unskilled—		
Males.....		18
Females.....		
Total.....		18
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		52
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		63
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER MONTH.

Avocations.	Males.	Females.	Remarks.
Engineers.....	\$75 00	.....
Firemen.....	50 00	.....
Drivers.....	\$60 00 to 65 00	.....
Brewers.....	55 00 to 75 00	.....
Foreman	210 00	.....

Value of goods manufactured yearly.....	\$126,733 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	66,568 00
Cost of building and grounds.....	90,000 00
Cost of machinery and repairs.....	35,000 00
Amount paid yearly for rent, taxes and insurance.....	3,000 00

GENERAL REMARKS.

Pay United States license of \$1.00 per barrel.

CARRIAGE MAKING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		8
Females.....		
Total.....		8
Unskilled—		
Males.....		3
Females.....		
Total.....		3
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		11
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Blacksmiths.....	\$2 25		
Woodworkers.....	2 25		
Painters.....	2 25		
Trimmers.....	2 50		
Unskilled.....	1 50		

Value of goods manufactured yearly.....	\$15,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$6,000 00
Cost of building and grounds.....	7,255 00
Cost of machinery and repairs.....	750 00
Amount paid yearly for rent, taxes and insurance.....	175 00

CARRIAGE AND WAGON MAKING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males		14
Females		
Total.....		<u>14</u>
Unskilled—		
Males		3
Females		7
Total.....		<u>10</u>
Under 14 years old—		
Males		2
Females		
Total.....		<u>2</u>
Aggregate.....		<u>26</u>
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Blacksmiths.....	\$2 25		
Woodworkers.....	2 25		
Printers.....	2 25		
Trimmers.....	2 25	\$1 60	Boys, \$1 00.
Unskilled.....	1 50	75	Boys, 1 00.

Value of goods manufactured yearly.....	\$21,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$8,000 00
Cost of building and grounds.....	6,000 00
Cost of Machinery and repairs.....	1,200 00
Amount paid yearly for rent, taxes and insurance.....	250 00

MANUFACTURE OF CLOTHING (JEANS).

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			4
Females.....			
Total.....			4
Unskilled—			
Males.....			20
Females.....			
Total.....			20
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.			24
WORKING TIME.			
Hours per diem.			10
Hours per week.			60
Weeks per annum.			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Cutters.....	\$2 50	.....
Seamstresses .....	.....	\$1 00	

Value of goods manufactured yearly.....	\$30,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$20,000 00
Cost of building and grounds.....	.....
Cost of tools and repairs.....	100 00
Amount paid yearly for rent, taxes and insurance.....	1,800 00

CLOTHING AND SHIRTMAKING.

NUMBER OF EMPLOYES.		
Skilled—		
Males		1
Females		25
Total		26
Unskilled—		
Males		1
Females		15
Total		16
Under 14 years old—		
Males		3
Females		
Total		3
Aggregate.....		45
WORKING TIME.		
Hours per diem.....		9
Hours per week		52
Weeks per annum.....		45

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Cutters	\$3 50		
Boy assistants.....	75		
Seamstresses—			
Skilled.....		\$1 00	
Unskilled		50	
Value of goods manufactured yearly.....			\$23,000 00
Number of weeks in operation.....			45
Value of raw material used yearly.....			\$10,000 00
Cost of building and grounds.....			
Cost of machinery and repairs.....			1,000 00
Amount paid yearly for rent, taxes and insurance.....			1,200 00

MANUFACTURING CLOTHING.

	NUMBER OF EMPLOYES.	
Skilled—		
Males	6	
Females.....	<u>20</u>	
Total	<u>26</u>	
Unskilled—		
Males	30	
Females.....	<u>3</u>	
Total	<u>30</u>	
Under 14 years old—		
Males	7	
Females.....	<u>3</u>	
Total	<u>10</u>	
Aggregate	<u>66</u>	
*WORKING TIME.		
Hours per diem.....		
Hours per week.....		
Weeks per annum.....		

* We have no working time. Our hands work at home by the piece.

CHARACTER OF WORK AND WAGES PAID PER DIEM.

For making pants, from \$1.25 to \$4.00 per doz.

Value of goods manufactured yearly.....	\$20,000 00
Number of weeks in operation.....	\$12,000:00
Value of raw material used yearly.....	<u>—</u>
Cost of buildings and grounds.....	<u>—</u>
Cost of machinery and repairs.....	<u>—</u>
Amount paid yearly for rent, taxes and insurance.....	400'00

MANUFACTURE OF SHIETS AND GENTS' WEAR.

NUMBER OF EMPLOYES.		
Skilled—		
Males.....		3
Females.....		<u>35 to 40</u>
Total.....		
Unskilled—		
Males.....		
Females.....		
Total.....		
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		
WORKING TIME.		
Hours per diem.....		9
Hours per week.....		54
Weeks per annum, all year except usual holidays.....		

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Male.	Females.	Remarks.
Cutters.....	\$65 00		
Operators.....	\$8 00		
Finishers.....	5 00		
Embroiderers.....	10 00		

Value of goods manufactured yearly.....	\$35,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$20,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	
Amount paid yearly for rent, taxes and insurance.....	

MANUFACTURERS OF FURNITURE.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males			50
Females.....			1
Total			<u>51</u>
Unskilled—			
Males			20
Females.....			1
Total			<u>21</u>
Under 14 years old—			
Males			
Females.....			
Total			
Aggregate			<u>72</u>
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Cabinet makers	\$2 50		
Varnishers.....	2 50		
Packers and helpers.....	1 75		
Females.....		\$1 25	

Value of goods manufactured yearly.....		\$700,000 00
Number of weeks in operation.....		52
Value of raw material used yearly.....		
Cost of building and grounds.....		\$40,000 00
Cost of machinery and repairs.....		
Amount paid yearly for rent, taxes and insurance.....		10,600 00

MANUFACTURE OF OFFICE AND STORE FURNITURE.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	18
Females .....	.....	1
Total .....	.....	19
Unskilled—		
Males .....	.....	4
Females .....	.....
Total .....	.....	4
Under 14 years old—		
Males .....	.....	2
Females .....	.....
Total .....	.....	2
Aggregate .....	.....	25
WORKING TIME.		
Hours per diem.....	.....	10
Hours per week.....	.....	60
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Cabinet makers.....	2 50	.....
Carvers	2 50	.....
Helpers	1 50	\$1 00	
Boys	1 00	.....

Value of goods manufactured yearly.....	\$16,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$3,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	
Amount paid yearly for rent, taxes and insurance.....	700 00

MANUFACTURE OF PLATE GLASS.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	373
Females.....	.....
Total.....	.....	373
Unskilled—		
Males .....	.....	172
Females.....	.....	10
Total.....	.....	182
Under 14 years old—		
Males .....	.....	26
Females.....	.....	9
Total.....	.....	35
Aggregate.....	.....	590
WORKING TIME.		
Hours per diem.....	.....	10
Hours per week.....	.....	60
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Manufacturing department.....	\$1 15 to \$4 00	50 cts to 60 cts.	
Machinists.....	1 75 to 2 50	.....
Blacksmiths.....	1 75 to 2 75	.....
Boiler men.....	1 38 to 1 75	.....
Engineers.....	1 75 to 2 25	.....
Carpenters.....	2 50 to 3 50	.....
Bricklayers.....	3 50 to 4 00	.....
Teamsters.....	1 25 to 2 00	.....
Laborers.....	1 15 to 2 00	.....
Clerks.....	1 00 to 3 00	.....

Value of goods manufactured yearly.....	.....
Number of weeks in operation.....	.....
Value of raw material used yearly.....	.....
Cost of building and grounds.....	.....
Cost of machinery and repairs.....	.....
Amount paid yearly for rent, taxes and insurance.....	.....

MANUFACTURE OF WINDOW GLASS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			21
Females.....			
Total.....			21
Unskilled—			
Males.....			26
Females.....			
Total.....			26
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			47
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			36—52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks,
Glass blowers.....	* \$5 31	.....	Piece work.
Skilled work.....	* 3 25	.....	" "
Cutters.....	* 4 78	.....	" "
Other laborers.....	* 1 64	.....	.

* Average.

Value of goods manufactured yearly.....	\$65,000 00
Number of weeks in operation.....	10,000 00
Value of raw material used yearly.....	10,000 00
Cost of building and grounds.....	60,000 00
Cost of machinery and repairs.....	4,000 00
Amount paid yearly for rent, taxes and insurance.....	2,500 00

MANUFACTURE OF GLASS BOTTLES, ETC.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			25
Females.....			
Total.....			25
Unskilled—			
Males.....			44
Females.....			
Total.....			44
Under 14 years old—			
Males.....			16
Females.....			
Total.....			16
Aggregate.....			85
		WORKING TIME.	
Hours per diem.....			9
Hours per week.....			53
Weeks per annum.....			43

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Glass blowers	\$4 00 to \$6 00	.....	Piece work.
Apprentices.....	1 50 to 2 00	.....	" "
Blacksmith.....	3 00	.....	Day work.
Laborers.....	1 30 to 2 00	.....	" "
Clerks.....	1 50 to 4 00	.....	" "
Boys over 14.....	60 to 80 cents }		These wait on the
Boys under 14.....	50 to 70 cents }		glass blowers.

Value of goods manufactured yearly.....	\$48,000 00
Number of weeks in operation.....	43
Value of raw material used yearly.....	\$18,000 00
Cost of building and grounds.....	25,000 00
Cost of machinery and repairs.....	7,000 00
Amount paid yearly for rent, taxes and insurance.....	1,200 00

GENERAL REMARKS.

Cost of labor for the year ending July 31, 1887, is \$25,995.40.

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GROCERS' SUNDRIES—CONFECTIONERY, ETC.

NUMBER OF EMPLOYES.		
Skilled—		
Males.....		30
Females.....		
Total.....		30
Unskilled—		
Males.....		100
Females.....		60
Total.....		160
Under 14 years old—		
Males.....		12
Females.....		15
Total.....		27
Aggregate.....		217
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Clerks.....	\$16 50		
Packers and porters	10 00		
Watchmen	10 00		
Salesmen.....	21 85		
Engineers.....	14 00		
Bakers	17 30		
Helpers	5 00		
Wood—box department.....	9 58	\$4 25	
Paper " "	13 00	5 00	
Candy makers.....	21 00		
Candy packers.....	4 75	4 75	

Value of goods manufactured yearly.....	\$500,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$450,000 00
Cost of building and grounds.....	30,000 00
Cost of Machinery and repairs.....	20,000 00
Amount paid yearly for rent, taxes and insurance.....	5,000 00

MANUFACTURERS OF GROCERS' SUNDRIES.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			3
Females.....			
Total.....			3
Unskilled—			
Males			14
Females.....			22
Total.....			36
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			39
WORKING TIME.			
Hours per diem.....			9—10
Hours per week.....			52—56
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Baking powder manufactory....	\$3 00	.....	Paid for labor for
" " "	2 50	.....	year ending Sept.
Jelly and preserves	3 33	.....	1, 1887, \$10,040.00.
Labelers and packers.....	65 to 90 cts.	45 cts. to \$1 10	
Value of goods manufactured yearly.....			\$237,252 00
Number of weeks in operation.....			52
Value of raw material used yearly.....			\$123,540 00
Cost of building and grounds.....			2,750 00
Cost of tools and repairs.....			3,830 00
Amount paid yearly for rent, taxes and insurance.....			

MANUFACTURERS OF GROCERS' SUNDRIES—COFFEE AND SPICE MILLS.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	4
Females.....	.....	1
Total .....	.....	5
Unskilled—		
Males .....	.....	4
Females.....	.....
Total .....	.....	4
Under 14 years old—		
Males .....	.....	3
Females.....	.....	1
Total .....	.....	4
Aggregate.....	.....	13
WORKING TIME.		
Hours per diem.....	.....	10
Hours per week.....	.....	60
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER MONTH.

Avocations.	Males.	Females.	Remarks.
Engineer.....	\$65 00	.....
Coffee roaster	65 00	.....
Spice grinder.....	50 00	.....
Extract manufacturers.....	75 00	.....
Type writers	40 00	.....

Value of goods manufactured yearly.....	\$450,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$250,000 00
Cost of building and grounds.....	35,000 00
Cost of machinery and repairs.....	7,500 00
Amount paid yearly for rent, taxes and insurance.....	4,000 00

GROCERS' SUNDRIES MANUFACTURERS.

		NUMBER OF EMPLOYES.	
Skilled—			
Males			2
Females.....			
Total			<u>2</u>
Unskilled—			
Males			8
Females.....			3
Total			<u>11</u>
Under 14 years old—			
Males			4
Females.....			6
Total			<u>10</u>
Aggregate.....			<u>23</u>
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Helpers.....	\$9 00 to \$17 00	\$4 00 to \$7 50	

Value of good manufactured yearly.....	\$50,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$20,000 00
Cost of building and grounds.....	12,000 00
Cost of machinery and repairs.....	3,000 00
Amount paid yearly for rent, taxes and insurance.....	

FOUNDRY AND JAIL BUILDING.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			40
Females.....			
Total.....			<u>40</u>
Unskilled—			
Males.....			45
Females.....			
Total.....			<u>45</u>
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			85
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Machinists.....	\$3 00		
Blacksmiths.....	2 00		
Laborers	1 50		

Value of goods manufactured yearly.....	\$300,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$225,000 00
Cost of building and grounds.....	40,000 00
Cost of machinery and repairs.....	35,000 00
Amount paid yearly for rent, taxes and insurance.....	2,000 00

STOVE FOUNDRY.

NUMBER OF EMPLOYEES.		
Skill'd—		
Males .....	.....	30
Females.....	.....
Total .....	.....	30
Unskill'd—		
Males .....	.....	10
Females.....	.....
Total .....	.....	10
Under 14 years old—		
Males .....	.....
Females.....	.....
Total .....	.....
Aggregate.....	.....	40
WORKING TIME.		
Hours per diem.....	.....	10
Hours per week.....	.....	60
Weeks per annum.....	.....	50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Moulders.....	\$2 75	.....
Unskill'd.....	1 50	.....

Value of goods manufactured yearly.....	\$60,000 00
Number of weeks in operation.....	50
Value of raw material use yearly.....	\$25,000 00
Cost of building and grounds.....	70,000 00
Cost of machinery and repairs.....	5,000 00
Amount paid yearly for rent, taxes and insurance.....	600 00

FOUNDRY.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			56
Females.....			
Total.....			56
Unskilled—			
Males.....			55
Females.....			
Total.....			55
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			111
		WORKING TIME.	
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			48

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Blacksmiths	\$2 25		
Helpers	1 75		
Pattern makers	2 75		
Moulder.....	2 75		
Finishers.....	2 25		
Laborers.....	1 50		
Apprentices.....	63		

Value of goods manufactured yearly.....	\$105,000 00
Number of weeks in operation.....	
Value of raw material used yearly.....	39 500 00
Cost of building and grounds.....	15,374 00
Cost of machinery and repairs.....	10,727 00
Amount paid yearly for rent, taxes and insurance.....	2,500 00

FOUNDERS AND MACHINISTS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			150
Females.....			
Total.....			150
Unskilled—			
Males.....			50
Females.....			
Total.....			50
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			200
		WORKING TIME.	
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Machinists	\$2 50	.....
Blacksmiths.....	2 50	.....
Helpers.....	1 75	.....
Pattern makers.....	2 25	.....
Moulders.....	2 50	.....
Moulder helpers.....	1 50	.....
Laborers	1 40	.....

Value of goods manufactured yearly	\$220,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$180,000 00
Cost of building and grounds.....	35,000 00
Cost of machinery and repairs.....	25,000 00
Amount paid yearly for rent, taxes and insurance.....	1,000 00

FOUNDRY—BRASS.

		NUMBER OF EMPLOYES.
Skilled—		
Males		16
Females		
Total		<u>16</u>
Unskilled—		
Males		6
Females		
Total		<u>6</u>
Under 14 years old—		
Males		4
Females		
Total		<u>4</u>
Aggregate		<u>26</u>
		WORKING TIME
Hours per diem		10
Hours per week		60
Weeks per annum		<u>52</u>

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Lath hands.....	\$2 00 to \$2 75	...	
Vice hands.....	1 75 to 2 25	...	
Polishers.....	1 25 to 2 50	...	
Drillers.....	50 to 1 50	...	
Grinders.....	50 to 1 50	...	
Moulders.....	1 75 to 2 75	...	
Helpers.....	1 00 to 1 50	...	
Laborers	1 00 to 1 50	...	

Value of goods manufactured yearly.....	\$20,500 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$7,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	2,800 00
Amount paid yearly for rent, taxes and insurance.....	900 00

FOUNDRY—WIRE—BRASS.

		NUMBER OF EMPLOYES.	
Skilled—			
Males		47	
Females.....			
Total		47	
Unskilled—			
Males		4	
Females.....			
Total		4	
Under 14 years old—			
Males		4	
Females.....			
Total		4	
Aggregate		55	
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			59
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Iron and brass workers.....	\$1 50 to \$2 50		
Wire workers.....	2 25 to 2 50		
Laborers	1 00 to 1 50		

Value of goods manufactured yearly.....	\$50,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	
Cost of buildings and grounds.....	
Cost of machinery and repairs.....	\$15,000 00
Amount paid yearly for rent, taxes and insurance.....	6,000 00

FLOUR MILLING BUSINESS.

		NUMBER OF EMPLOYES.
Skilled—		
Males.....		26
Females.....		
Total.....		26
Unskilled—		
Males.....		4
Females.....		
Total.....		4
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate		30
		WORKING TIME.
Hours per diem.....		12
Hours per week.....		72
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Male.	Females.	Remarks.
Engineers.....	\$3 00		
Firemen.....	2 00		
Millers.....	3 00		
Packers.....	1 75		
Laborers.....	1 50		

Value of goods manufactured yearly.....	\$320,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$251,000 00
Cost of building and grounds.....	15,000 00
Cost of machinery and repairs.....	50,000 00
Amount paid yearly for rent, taxes and insurance.....	2,300 00

CHOP MILL AND GROUND FEED.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males		2	
Females.....			
Total		2	
Unskilled—			
Males		6	
Females.....			
Total		6	
Under 14 years old—			
Males		3	
Females.....			
Total		3	
Aggregate		11	
WORKING TIME.			
Hours per diem.....		10	
Hours per week.....		60	
Weeks per annum.....		50	

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Miller	\$2 75		
Engineer.....	2 00		
Packers.....	1 60		
Laborers	1 50		

Value of goods manufactured yearly.....	\$65,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$30,000 00
Cost of building and grounds.....	4,500 00
Cost of machinery and repairs.....	4,000 00
Amount paid yearly for rent, taxes and insurance.....	250 00

MILLING—FLOUR AND FEED.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males			8
Females.....			
Total			
Unskilled—			8
Males.....			3
Females.....			
Total			
Under 14 years old—			3
Males			2
Females.....			
Total			2
Aggregate			13
WORKING TIME.			
Hours per diem.....			12
Hours per week.....			72
Weeks per annum.....			50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Miller.....	\$2 30		
Engineer'.....	1 90		
Bran packer.....	1 50		
Flour ".....	1 90		
Driver	1 70		
Rousters	1 50		

Value of goods manufactured yearly.....	\$70,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$36,000 00
Cost of building and grounds.....	12,000 00
Cost of machinery and repairs.....	10,000 00
Amount paid yearly for rent, taxes and insurance.....	1,200 00

FLOUR MILL.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			6
Females.....			
Total.....			<u>6</u>
Unskilled—			
Males.....			14
Females.....			
Total.....			<u>14</u>
Under 14 years old—			
Males.....			3
Females.....			
Total.....			<u>3</u>
Aggregate.....			23
WORKING TIME.			
Hours per diem.....			12
Hours per week.....			72
Weeks per annum.....			50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Millers	\$2 65		
Engineers	2 00		
Flour packers	2 00		
Bran	1 75		
Laborers	1 25		

Value of goods manufactured yearly.....	\$125,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$72,000 00
Cost of building and grounds.....	32,000 00
Cost of machinery and repairs.....	16,000 00
Amount paid yearly for rent, taxes and insurance.....	3,200 00

MILLING—MANUFACTURE OF LUMBER.

		NUMBER OF EMPLOYES.	
Skilled—			
Males			10
Females			
Total.....			10
Unskilled—			
Males.....			65
Females			
Total.....			65
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			75
		WORKING TIME.	
Hours per diem.....			11
Hours per week.....			66
Weeks per annum.....			52

'CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Sawyers.....	\$3 00	.....
Engineers.....	2 00	.....
Foreman	2 00	.....
Book-keeper	3 00	.....
Laborers	1 25	.....

Value of goods manufactured yearly.....		\$100,000 00
Number of weeks in operation.....		52
Value of raw material used yearly.....		\$25,000 00
Cost of building and grounds.....		10,000 00
Cost of Machinery and repairs.....		12,000 00
Amount paid yearly for rent, taxes and insurance.....		4,000 00

PLANING MILL.

		NUMBER OF EMPLOYES.	
Skilled—			
Males.....			25
Females.....			
Total.....			25
Unskilled—			
Males.....			50
Females.....			
Total.....			50
Under 14 years old—			
Males.....			3
Females.....			
Total.....			3
Aggregate.....			78
		WORKING TIME.	
Hours per diem.....			8—10
Hours per week.....			48—60
Weeks per annum.....			50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foreman.....	\$5 00		
Skilled labor.....	\$2 00 to \$3 00		
Unskilled.....	1 00 to 2 00		

Value of goods manufactured yearly.....	\$97,500 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	40,000 00
Cost of building and grounds.....	15,000 00
Cost of machinery and repairs.....	10,000 00
Amount paid yearly for rent, taxes and insurance.....	3,600 00

SAW MILLING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	4
Females.....	.....
Total .....	.....	4
Unskilled—		
Males .....	.....	40
Females.....	.....
Total .....	.....	40
Under 14 years old—		
Males .....	.....
Females.....	.....
Total .....	.....
Aggregate.....	.....	44
WORKING TIME.		
Hours per diem.....	.....	11
Hours per week.....	.....	66
Weeks per annum.....	.....	40

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Sawing	\$3 00	.....
Laborers.....	\$1 00 to \$2 00	.....

Value of goods manufactured yearly.....	.....	\$35,000 00
Number of weeks in operation.....	.....	40
Value of raw material use yearly.....	.....	\$15,000 00
Cost of building and grounds.....	.....	10,000 00
Cost of machinery and repairs.....	.....
Amount paid yearly for rent, taxes and insurance.....	.....	100 00

MANUFACTURERS OF HARD WOOD LUMBER.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males			25
Females.....			
Total			25
Unskilled—			
Males			50
Females.....			
Total			50
Under 14 years old—			
Males			4
Females.....			
Total			4
Aggregate			79
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Engineers	\$3 50		
Fliers.....	3 50		
Sawyers.....	2 50		
Setters	1 75		
Edgers	2 50		
Laborers	1 00 to 1 50		

Value of goods manufactured yearly.....	\$250,000 00	
Number of weeks in operation.....		52
Value of raw material used yearly.....		\$120,000 00
Cost of buildings and grounds.....		50,000 00
Cost of machinery and repairs.....		2,000 00
Amount paid yearly for rent, taxes and insurance.....		3,000 00

PLANING MILL—SASH, DOORS AND BLINDS.

NUMBER OF EMPLOYES.		
Skilled—		
Males.....		75
Females.....		
Total.....	4.....	<u>75</u>
Unskilled—		
Males.....		10'
Females.....		
Total.....	4.....	<u>10</u>
Under 14 years old—		
Males.....		8
Females.....		
Total.....	4.....	<u>8</u>
Aggregate .....	.....	<u>93</u>
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Male.	Females.	Remarks.
Carpenters.....	\$2 00 to \$3 25	.....
Machine hands.....	1 50 to 3 25	.....
Boys	75 cents.	.....

Value of goods manufactured yearly.....	\$80,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$35,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	60,000 00
Amount paid yearly for rent, taxes and insurance.....	5,000 00

MANUFACTURE OF SASH, DOORS AND BLINDS.

		NUMBER OF EMPLOYES.	
Skilled—			
Males		60	
Females.....			
Total.....		60	
Unskilled—			
Males		20	
Females.....			
Total.....		20	
Under 14 years old—			
Males		8	
Females.....			
Total.....		8	
Aggregate.....		88	
WORKING TIME.			
Hours per diem.....			9
Hours per week.....			54
Weeks per annum.....			50

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks,
Foreman.....	\$4 00	.....	.
Carpenters.....	\$1 75 to 3 00	.....
Machine hands.....	2 50 to 3 00	.....
Laborers.....	1 50 to 1 75	.....

Value of goods manufactured yearly.....	\$108,000 00
Number of weeks in operation.....	50
Value of raw material used yearly.....	\$52,000 00
Cost of building and grounds.....	12,000 00
Cost of machinery and repairs.....	6,000 00
Amount paid yearly for rent, taxes and insurance.....	5,000 00

COOPEAGE.

		NUMBER OF EMPLOYES.	
Skilled—			
Males.....			20
Females.....			
Total.....			20
Unskilled—			
Males.....			7
Females.....			
Total.....			7
Under 14 years old—			
Males.....			4
Females.....			
Total.....			4
Aggregate.....			31
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			50
Weeks per annum.....			48

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Coopers.....	\$10 00		
Machine men.....	9 00		
Laborers.....	9 00		
Boys.....	4 50		

Value of goods manufactured yearly.....	\$60,000 00
Number of weeks in operation.....	48
Value of raw material used yearly.....	\$26,000 00
Cost of building and grounds.....	12,000 00
Cost of machinery and repairs.....	4,000 00
Amount paid yearly for rent, taxes and insurance.....	475 00

MANUFACTURE OF MATCHES.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males		21	
Females.....		32	
Total		53	
Unskilled—			
Males			
Females.....			
Total			
Under 14 years old—			
Males			
Females.....			
Total			
Aggregate.....		53	
WORKING TIME.			
Hours per diem.....		10	
Hours per week.....		50	
Weeks per annum.....		50	

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
.....	\$3 00 to \$10 00	\$3 00 to \$6 00	

Value of goods manufactured yearly.....		\$20,000 00
Number of weeks in operation.....		50
Value of raw material used yearly.....		\$10,000 00
Cost of building and grounds.....		
Cost of machinery and repairs.....		
Amount paid yearly for rent, taxes and insurance.....		900 00

MANUFACTURE OF MATCHES.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		30
Females.....		42
		—
Total.....		72
Unskilled—		
Males.....		
Females.....		
		—
Total.....		
Under 14 years old—		
Males.....		17
Females.....		14
		—
Total.....		31
Aggregate.....		103
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		50

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
.....	\$4 00 to \$11 00	\$3 00 to \$7 50	

Value of goods manufactured yearly.....		\$42,000 00
Number of weeks in operation.....		50
Value of raw material used yearly.....		\$18,000 00
Cost of building and grounds.....		
Cost of machinery and repairs.....		
Amount paid yearly for rent, taxes and insurance.....		

PORK AND BEEF PACKING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males .....	.....	224
Females .....	.....	10
Total .....	.....	234
Unskilled—		
Males .....	.....	283
Females .....	.....	33
Total .....	.....	316
Under 14 years old—		
Males .....	.....	10
Females .....	.....	2
Total .....	.....	12
Aggregate.....	.....	562
WORKING TIME.		
Hours per diem.....	.....	10
Hours per week.....	.....	60
Weeks per annum.....	.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Butchers	\$3 00	.....
Meat trimmers.....	2 00	.....
Sewing girls .....	.....	\$1 10 to \$1 50	
Carpenters.....	3 00	.....
Engineers.....	2 50	.....
Coopers.....	3 50	.....
Laborers	1 67½	.....
Boys	1 00	.....
Clerks.....	3 00	\$1 75	

Value of good manufactured yearly.....	.....	\$3,888,400 00
Number of weeks in operation.....	.....	52
Value of raw material used yearly.....	.....	\$2,946,320 00
Cost of building and grounds.....	.....	300,000 00
Cost of machinery and repairs.....	.....	85,000 00
Amount paid yearly for rent, taxes and insurance.....	.....	12,300 00

PORK PACKING.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			50
Females.....			
Total.....			<u>50</u>
Unskilled—			
Males.....			50
Females.....			
Total.....			<u>50</u>
Under 14 years old—			
Males.....			12
Females.....			
Total.....			<u>12</u>
Aggregate.....			112
		WORKING TIME.	
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			40

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Slaughter house—			
Skilled.....	\$1 75 to \$3 00		
Unskilled.....			
Packing department—			
Skilled.....	2 00		
Unskilled.....	1 50		
Carpenters.....	2 25 to 2 75		
Firemen.....	2 00		
Coopers.....	2 75		
Boys.....	50 to 1 25		

Value of goods manufactured yearly.....	\$1,200,000 00
Number of weeks in operation.....	40
Value of raw material used yearly.....	\$900,000 00
Cost of building and grounds.....	50,000 00
Cost of machinery and repairs.....	12,000 00
Amount paid yearly for rent, taxes and insurance.....	7,000 00

JOB PRINTING.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		25
Females.....		
Total.....		25
Unskilled—		
Males.....		15
Females.....		4
Total.....		19
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		44
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		59
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Counting room.....	\$25 00	.....
Composing room—			
Skilled.....	15 00 to 20 00	.....
Unskilled.....	3 00 to 10 00	.....
Press room—			
Skilled	15 00 to 20 00	.....
Unskilled.....	2 50 to 10 00	.....
Binderly—			
Skilled	15 to to 25 00	.....
Unskilled.....	2 00 to 10 00	\$2 50 to \$6 00	
Lithographing—			
Skilled	15 00 to 35 00	.....
Unskilled.....	3 00 to 12 00	.....

Value of goods manufactured yearly	\$50,000 00
Number of weeks in operation.....	52
Value of raw material used yearly	\$20,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	51,957 00
Amount paid yearly for rent, taxes and insurance.....	3,000 00

PRINTING—NEWSPAPER.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....		134	
Females.....		2	
	<u> Total.....</u>	<u>136</u>	
Unskilled—			
Males.....		7	
Females.....			
	<u> Total.....</u>	<u>7</u>	
Under 14 years old—			
Males.....			
Females.....			
	<u> Total.....</u>	<u> </u>	
	<u>Aggregate.....</u>	<u>143</u>	
WORKING TIME			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Printers.....	\$2 50	\$1 75	
Printer's apprentices.....	85	.....
Editors.....	4 16	2 00	
Clerks.....	3 33	.....
Pressmen.....	3 00	.....
Stereotypers.....	3 00	.....

Value of goods manufactured yearly.....	\$310,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$82,250 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	
Amount paid yearly for rent, taxes and insurance.....	6,500 00

NEWSPAPER PRINTING, ELECTROTYPEPING, ETC.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males		70	
Females.....		1	
	<u> </u>		
Total		71	
Unskilled—			
Males		6	
Females.....		<u> </u>	
	<u> </u>		
Total		6	
Under 14 years old—			
Males		<u> </u>	
Females.....		<u> </u>	
	<u> </u>		
Total		<u> </u>	
Aggregate		77	
		WORKING TIME.	
Hours per diem.....		10	
Hours per week.....		60	
Weeks per annum.....		52	

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Compositors.....	\$15 00		
Pressmen and feeders.....	14 00		
Electrotypers	16 00		
Stereotypers	16 00		
Accountants	15 00	\$15 00	
Miscellaneous.....	10 00		

Value of goods manufactured yearly.....	\$125,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$75,000 00
Cost of building and grounds.....	30,000 00
Cost of machinery and repairs.....	5,500 00
Amount paid yearly for rent, taxes and insurance.....	

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PRINTING, ENGRAVING AND LITHOGRAPHING.

		NUMBER OF EMPLOYES.	
Skilled—			
Males.....			64
Females.....			2
Total			66
Unskilled—			
Males.....			
Females.....			
Total			
Under 14 years old—			
Males.....			
Females.....			
Total			
Aggregate			66
		WORKING TIME.	
Hours per diem.....			10-
Hours per week.....			50-
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foremen	\$4 00 to \$5 00		
Pressmen.....	3 50 to 4 00		
Feeders.....	1 00 to 2 50		
Compositors.....	1 35 to 3 33		
Binders.....		\$1 00 to \$1 35	
Artists	1 00 to 10 00		

Value of goods manufactured yearly.....	\$100,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$25,000 00
Cost of building and grounds.....	44,000 00
Cost of machinery and repairs.....	
Amount paid yearly for rent, taxes and insurance.....	1,370 00

PRINTERS AND BOOK MANUFACTURERS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males		17	
Females.....		10	
Total.....		27	
Unskilled—			
Males			
Females.....			
Total.....			
Under 14 years old—			
Males			
Females.....			
Total.....			
Aggregate.....		27	
		WORKING TIME.	
Hours per diem.....		10	
Hours per week.....		59	
Weeks per annum.....		52	

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Printers.....	\$2 23	\$1 48	

Value of goods manufactured yearly.....	\$49,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$6,700 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	10,900 00
Amount paid yearly for rent, taxes and insurance.....	7,400 00

PRINTING, LITHOGRAPHING, BOOK BINDING, ETC.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....		111	
Females.....		29	
	Total.	140	
Unskilled—			
Males.....		5	
Females.....			
	Total.	5	
Under 14 years old—			
Males.....		2	
Females.....			
	Total.	2	
Aggregate.....		147	
		WORKING TIME.	
Hours per diem.....		10	
Hours per week.....		59	
Weeks per annum.....		52	

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Printers.....	\$14 00	.....
Lithographers.....	24 00	.....
Binders.....	14 00	.....
Book folders.....	.....	\$6 00	
Feeders.....	8 00	.....
Wood engravers.....	20 00	.....

Value of goods manufactured yearly.....	\$140,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$70,000 00
Cost of building and grounds.....	37,000 00
Cost of machinery and repairs.....	75,000 00
Amount paid yearly for rent, taxes and insurance.....	1,800 00

MANUFACTURERS OF PAINTS AND OILS.

		NUMBER OF EMPLOYES.	
Skilled—			
Males.....			4
Females.....			
Total.....			4
Unskilled—			
Males.....			60
Females.....			
Total.....			60
Under 14 years old—			
Males.....			
Females.....			
Total.....			
Aggregate.....			64
		WORKING TIME.	
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			48

CHARACTER OF WORK AND WAGES PAID PER ANNUM

Avocations.	Males.	Females.	Remarks.
Supt. and engineer.....	\$2,000 00		
Engineer.....	1,980 00		
Refiners.....	1,980 00		
Laborers	\$1 65 for 10 hrs		

Value of goods manufactured yearly.....	\$241,000 00
Number of weeks in operation.....	48
Value of raw material used yearly.....	\$175 000 00
Cost of building and grounds.....	45,000 00
Cost of machinery and repairs.....	31,000 00
Amount paid yearly for rent, taxes and insurance.....	14,255 00

MANUFACTURING LINSEED OIL.

NUMBER OF EMPLOYEES.		
Skilled—		
Males		7
Females.....		
Total		7
Unskilled—		
Males		15
Females.....		
Total		15
Under 14 years old—		
Males		
Females.....		
Total		
Aggregate.....		22
WORKING TIME.		
Hours per diem.....		11
Hours per week.....		65
Weeks per annum.....		44

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Skilled.....	\$2 50		
Unskilled.....	1 85		

Value of goods manufactured yearly.....		\$300,000 00
Number of weeks in operation.....		44
Value of raw material use yearly.....		\$250,000 00
Cost of building and grounds.....		40,000 00
Cost of machinery and repairs.....		30,000 00
Amount paid yearly for rent, taxes and insurance.....		5,000 00

MANUFACTURERS OF SADDLES AND HARNESS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males.....			18
Females.....			
Total			18
Unskilled—			
Males.....			3
Females.....			
Total			3
Under 14 years old—			
Males.....			2
Females.....			
Total			2
Aggregate.....			23
WORKING TIME.			
Hours per diem.....			10
Hours per week.....			60
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Making saddles.....	\$2 50		
“ harness.....	2 00		
Unskilled.....	1 50		
Boys.....	75		

Value of goods manufactured yearly.....		\$20,000 00
Number of weeks in operation.....		52
Value of raw material used yearly.....		\$11,000 00
Cost of building and grounds.....		
Cost of machinery and repairs.....		
Amount paid yearly for rent, taxes and insurance.....		2,000 00

MANUFACTURE OF SADDLES, HARNESS, COLLARS, ETC.

		NUMBER OF EMPLOYES.	
Skilled—			
Males.....			57
Females.....			
Total.....			57
Unskilled—			
Males.....			8
Females.....			
Total.....			8
Under 14 years old—			
Males.....			7
Females.....			
Total.....			7
Aggregate.....			72
		WORKING TIME.	
Hours per diem.....			10
Hours per week.....			58
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foreman	\$3 50	.....
Sewing machine operator.....	2 50	.....
Saddle hands.....	2 50	.....
Harness and collar maker.....	2 00	.....
Unskilled.....	1 50	.....
Boys.....	75c to 1 25	.....

Value of goods manufactured yearly.....	\$85,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$56,000 00
Cost of building and grounds.....	14,000 00
Cost of machinery and repairs.....	5,000 00
Amount paid yearly for rent, taxes and insurance.....	3,000 00

MANUFACTURE OF BOOTS AND SHOES.

		NUMBER OF EMPLOYES.	
Skilled—			
Males		129	
Females		138	
Total.....		267	
Unskilled—			
Males			
Females			
Total.....			
Under 14 years old—			
Males		18	
Females		13	
Total.....		31	
Aggregate.....		298	
		WORKING TIME.	
Hours per diem.....		10	
Hours per week.....		50	
Weeks per annum.....		51	

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Cutters.....	\$18 00		
Lasters.....	15 00		
Heelers.....	15 00		
Burnishers.....	15 00		
Stitchers.....		\$6 00	
Trimmers		7 00	

Value of goods manufactured yearly.....	\$275,000 00
Number of weeks in operation.....	51
Value of raw material used yearly.....	\$215,000 00
Cost of building and grounds.....	
Cost of Machinery and repairs.....	1,200 00
Amount paid yearly for rent, taxes and insurance.....	700 00

MANUFACTURE OF SOAP.

NUMBER OF EMPLOYES.	
Skilled—	
Males	
Females.....	
Total	
Unskilled—	
Males	88
Females.....	14
Total	
Under 14 years old—	
Males	6
Females.....	8
Total	
Aggregate.....	14
	102
	116
WORKING TIME.	
Hours per diem.....	10
Hours per week	60
Weeks per annum.....	52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Laborers	75c. to \$1 25	50c. to \$1 00	

Value of goods manufactured yearly.....	\$250,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$195,000 00
Cost of building and grounds.....	40,000 00
Cost of machinery and repairs.....	25,000 00
Amount paid yearly for rent, taxes and insurance.....	3,900 00

TOBACCO MANUFACTURERS.

NUMBER OF EMPLOYES.		
Skilled—		
Males.....	21	
Females.....	105	
Total.....	126	
Unskilled—		
Males.....	40	
Females.....	20	
Total.....	60	
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....	186	
WORKING TIME.		
Hours per diem.....	9	
Hours per week.....	54	
Weeks per annum.....	48	

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Foreman.....	\$6 00		
Engineer.....	5 35		
Fireman.....	2 00		
Cutters of boxes.....	2 35		
Casers.....	2 00		
Helpers.....	1 50		
Stemmers.....	1 00		
Sewers.....		\$1 10	
Stringers.....		65	
Packers.....		1 50	
Labelers.....		75	
Carriers.....		65	

Value of goods manufactured yearly.....	\$625,200 00
Number of weeks in operation.....	48
Value of raw material used yearly.....	\$272,000 00
Cost of building and grounds.....	
Cost of machinery and repairs.....	22,000 00
Amount paid yearly for rent, taxes and insurance.....	290,200 00

GENERAL REMARKS.

Taxes include U. S. tax on manufactured tobacco ; stemmers are boys 15 to 18 years old ; female help are girls from 15 to 20 years old.

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MANUFACTURERS OF CIGARS.

		NUMBER OF EMPLOYEES.	
Skilled—			
Males		19	
Females.....			
Total		19	
Unskilled—			
Males		5	
Females.....			
Total		5	
Under 14 years old—			
Males		3	
Females.....			
Total		3	
Aggregate		27	
WORKING TIME.			
Hours per diem.....			8
Hours per week.....			48
Weeks per annum.....			52

CHARACTER OF WORK AND WAGES PAID PER WEEK.

Avocations.	Males.	Females.	Remarks.
Cigarmakers	\$12 00		
Cigar packers.....	12 00		
Tobacco strippers.....	3 50		

Value of goods manufactured yearly.....	\$40,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$15,000 00
Cost of buildings and grounds.....	
Cost of machinery and repairs.....	
Amount paid yearly for rent, taxes and insurance.....	

VINEGAR FACTORY.

NUMBER OF EMPLOYEES.		
Skilled—		
Males		2
Females.....		
Total.....		2
Unskilled—		
Males		3
Females.....		
Total.....		3
Under 14 years old—		
Males		
Females.....		
Total.....		
Aggregate		5
WORKING TIME.		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		42

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Distillers.....	\$3 00	.....
Engineers	2 50	.....
Laborers	1 50	.....
Teamsters.....	1 50	.....

Value of goods manufactured yearly.....	\$30,000 00
Number of weeks in operation.....	42
Value of raw material used yearly.....	\$22,500 00
Cost of building and grounds.....	13,000 00
Cost of machinery and repairs.....	3,000 00
Amount paid yearly for rent, taxes and insurance.....	1,550 00

VINEGAR FACTORY.

NUMBER OF EMPLOYEES.		
Skilled—		
Males.....		19
Females.....		2
Total.....		21
Unskilled—		
Males.....		30
Females.....		
Total.....		30
Under 14 years old—		
Males.....		
Females.....		
Total.....		
Aggregate.....		51
WORKING TIME		
Hours per diem.....		10
Hours per week.....		60
Weeks per annum.....		52

CHARACTER OF WORK AND WAGES PAID PER DIEM.

Avocations.	Males.	Females.	Remarks.
Salesmen.....	\$2 50	.....
Clerks.....	2 25	\$1 75	
Factory hands.....	\$1 25 to 2 00	.....
Laborers.....	1 25	.....

Value of goods manufactured yearly.....	\$300,000 00
Number of weeks in operation.....	52
Value of raw material used yearly.....	\$120,000 00
Cost of building and grounds.....	50,000 00
Cost of machinery and repairs.....	9,000 00
Amount paid yearly for rent, taxes and insurance.....	500 00

CONSOLIDATED TABLE OF REPORTS OF MANUFAC-

Industries.	No. of establishments..	Capital invested.	Number of employees.		
			Males.....	Female.....	Minors.....
Manufacture of agricultural implements.....	11	\$559,700	514.....	.....	11
Manufacture of bags and bagging.....	4	340,000	163	181	93
Manufacture of bakery products.....	213	874,000	816	182	94
Manufacture of boots and shoes.....	22	89,100	302	235	222
Manufacture of boxes—paper.....	8	23,750	33	57	29
Manufacture of boxes—wooden.....	19	111,100	146	28	27
Manufacture of brick, tile, etc.....	81	860,000	1,472.....	.....	417
Manufacture of brooms.....	13	9,300	42	3	35
Manufacture of carriages and wagons.....	91	1,122,000	1,443	11	73
Manufacture of clothing, including shirtm'g	18	49,800	112	615	78
Manufacture of cooperage.....	134	589,200	1,217.....	.....	128
Manufacture of flour, meal, mill feed, etc.	737	7,353,400	3,051.....	.....	.....
Manufacture of foundry products.....	18	1,182,000	1,400.....	.....	18
Manufacture of glass.....	6	1,430,000	727	43	241
Manufacture of grocers' sundries.....	12	174,000	83	32	25
Manufacture of lumber.....	693	533,600	3,419.....	.....	149
Manufacture of harness and saddlery.....	43	643,000	598.....	.....	48
Manufacture of lime.....	11	78,900	47	.....	.....
Manufacture of matches.....	3.....	.....	47	62	19
Manufacture of malt—liquors.....	51	4,798,900	1,628.....	.....	119
Manufacture of tobacco—cigars, snuff, etc.	281	1,875,000	1,692	218	569
Manufacture of paints and oils.....	9	1,478,000	489.....	.....	8
Manufacture of soaps.....	7	210,000	184	4	8
Manufacture of vinegar.....	4	60,500	34	8	2
Manufacture of wire and wirework.....	3	54,000	43	.....	20
Meat—canning and packing.....	33	1,263,000	614	19	84
Printing.....	134	3,100,000	2,786	319	228

TURING AND OTHER INDUSTRIES IN MISSOURI.

Average paid per week.			Length of time worked.	Weeks per year	Value of raw material used	Value of product.	
Male.....	Female	Total amount paid in wages					
Male.....	Female	Minors	Days per week.	Hours per day.			
\$9 00.....	\$4 00	\$224,630 00	10	6	52	\$546,600 00	
13 00.....	5 00	4 50	155,295 00	10	6	554,800 00	
14 00.....	5 00	4 50	401,750 00	10	6	2,146,500 00	
15 00.....	6 00	3 00	448,500 00	10	6	798,300 00	
12 00.....	5 00	4 00	26,750 00	10	6	42,900 00	
13 00.....	4 00	4 50	78,000 00	10	6	157,000 00	
13 50.....	3 50	4 12,000 00	7	4½	32	314,000 00	
7 50.....	3 00	2 50	31,250 00	10	6	52	68,300 00
13 00.....	3 50	3 50	661,200 00	10	6	1,547,700 00	
9 00.....	4 50	4 50	121,600 00	9	6	32	281,500 00
10 00.....		4 00	479,800 00	10	6	48	1,097,300 00
10 75.....			1,127,250 00	12	6	50	27,019,900 00
14 00.....		6 00	583,700 00	10	6	44	1,285,600 00
15 00.....	3 50	3 00	387,000 00	10	6	52	372,800 00
14 00.....	9 00	5 00	62,950 00	10	6	52	292,500 00
10 50.....		5 00	691,700 00	10	6	50	3,742,000 00
12 00.....		4 75	218,300 00	10	6	50	703,900 00
10 00.....			17,800 00	10	6	46	28,750 00
7 00.....	4 00	3 00	30,900 00	10	6	50	30,500 00
13 75.....		6 00	712,300 00	10	6	52	2,698,400 00
12 00.....	3 50	3 50	978,400 00	9	6	52	4,693,200 00
12 50.....		4 50	198,900 00	10	6	52	1,976,500 00
12 50.....	4 50	4 50	78,500 00	10	6	52	394,600 00
9 00.....	5 00	3 00	18,900 00	10	6	50	148,500 00
15 00.....		5 00	26,500 00	10	6	52	54,500 00
15 00.....	8 00	6 00	273,500 00	10	6	52	8,174,000 00
18 00.....	9 00	4 00	3,147,300 00	10	6	52	1,763,40 00
							5,164,600 00

MISSOURI RAILWAYS.

MISSOURI RAILWAYS.

In the following pages we present an unusually full report of the locomotive railways operated in Missouri.

It is interesting and valuable as showing the vast army of men employed in the operation of our railway system, and the average wages each class of employees receive.

The officials of the various roads have, as a general thing, been prompt and careful in the preparation of their reports:

**ANNUAL REPORT OF THE MISSOURI PACIFIC RAILWAY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION FOR THE YEAR ENDING DECEMBER 31, 1886.**

Class.	No em- ployees.	Average an- nual salary.
General officers.....	26	\$1,460 97
Assistant and division superintendents.....	4	1,782 66
Civil engineers.....	1	1,800 00
Master mechanics.....	1	2,100 00
Roadmasters and bridge foremen.....	10	892 80
Clerks	500	748 80
Machinists	331	795 60
Passenger conductors.....	45	1,170 00
Freight conductors.....	101	1,004 40
Locomotive engineers.....	193	1,306 80
Firemen	210	766 80
Wipers	81	522 00
Baggagemen	66	550 80
Brakemen.....	343	705 60
Station agents, not telegraph operators.....	52	792 00
Station agents, also telegraph operators.....	75	615 60
Telegraph operators, not station agents.....	121	615 60
Carpenters.....	380	741 60
Section foremen.....	132	550 80
Section men.....	807	403 20
Laborers	554	475 20
Switchmen and watchmen.....	330	691 20
Bridge tenders and pump men.....	60	392 40
Soliciting agents.....		
Traveling passenger agents.....	4	468 00
Contracting agents.....	2	702 00
Painters.....	52	691 20
Extra gang foremen.....	58	993 60
Other employees.....	444	655 20

C. G. WARNER, General Auditor.

M. M. O.

**ANNUAL REPORT OF THE ST. LOUIS, IRON MOUNTAIN &
SOUTHERN RAILWAY TO THE BUREAU OF LABOR STA-
TISTICS AND INSPECTION, FOR THE YEAR ENDING DE-
CEMBER 31, 1886.**

Class.	No. em- ployees.	Average an- nual salaries.
General officers.....	21	\$1,419 20
Assistant and division superintendents.....	2	1,717 20
Civil engineers.....	3	921 60
Master mechanics	1	2,400 00
Roadmasters and bridge foremen.....	10	1,080 00
Clerks.....	293	766 80
Machinists.....	201	763 20
Passenger conductors.....	27	1,195 20
Freight conductors.....	67	1,274 40
Locomotive engineers.....	115	1,263 60
Firemen.....	119	741 60
Wipers	48	442 80
Baggagemen.....	26	594 00
Brakemen.....	260	680 40
Station agents, not telegraph operators.....	28	734 40
Station agents, also telegraph operators.....	50	720 00
Telegraph operators, not station agents.....	61	640 80
Carpenters.....	175	730 80
Section foremen.....	79	601 20
Section men.....	498	392 40
Laborers.....	467	478 80
Switchmen and watchmen	113	640 80
Bridge tenders and pump men.....	24	392 40
Soliciting agents.....		
Traveling passenger agents	4	396 00
Contracting agents.....	2	597 60
Painters.....	13	712 80
Extra gang foremen.....	19	684 00
Other employes.....	333	640 80

C. G. WARNER, General Auditor.

**ANNUAL REPORT OF THE MISSOURI, KANSAS & TEXAS
RAILWAY TO THE BUREAU OF LABOR STATISTICS AND
INSPECTION, FOR THE YEAR ENDING DEC. 31, 1886.**

Class.	No. em-ployes.	Average an-nual salaries.
General officers.....	20	\$1,339 20
Assistant and division superintendents.....	3	1,659 60
Civil engineers.....	1	744 00
Master mechanics.....	1	2,100 00
Roadmasters and bridge foremen.....	3	1,159 20
Clerks.....	160	810 00
Machinists.....	32	828 00
Passenger conductors.....	14	1,206 00
Freight conductors	36	1,065 60
Locomotive engineers.....	35	1,267 20
Firemen.....	41	745 20
Wipers	8	475 20
Baggagemen	16	604 80
Brakemen.....	98	716 40
Station agents, not telegraph operators.....	6	1,000 80
Station agents, also telegraph operators.....	35	626 40
Telegraph operators, not station agents.....	39	586 80
Carpenters	106	874 80
Section foremen.....	43	532 80
Section men.....	236	403 20
Laborers	74	396 00
Switchmen and watchmen.....	43	633 60
Bridge tenders and pump men.....	17	439 20
Soliciting agents.....		
Traveling passenger agents.....	4	370 80
Contracting agents.....	2	558 00
Painters.....	18	806 40
Extra gang foremen.....	6	720 00
Other employes.....	131	745 20

C. G. WARNER, General Auditor.

M. T. O. L.

**ANNUAL REPORT OF THE CHICAGO & ALTON RAILROAD
COMPANY TO THE BUREAU OF LABOR STATISTICS AND
INSPECTION, FOR THE YEAR ENDING DECEMBER 31,
1886, FOR ITS WHOLE LINE OF RAILROAD.**

Class.	No. em- ployees.	Average an- nual salaries.
General officers.....	17	\$4,405 85
Assistant and division superintendents.....	5	2,720 00
Civil engineers.....		
Master mechanics.....	1	4,500 00
Roadmasters	6	1,649 30
Clerks.....	222	693 92
Machinists	708	597 88
Passenger conductors.....	31	1,153 11
Freight conductors	130	878 28
Locomotive engineers.....	154	1,712 70
Firemen.....	155	1,004 40
Wipers	180	493 63
Baggagemen.....	61	429 98
Brakemen.....	309	588 13
Station agents, not telegraph operators.....	45	780 36
Station agents, also telegraph operators.....	110	455 76
Telegraph operators, not station agents.....	92	621 86
Carpenters	235	652 50
Section foremen	179	576 94
Section men.....	701	408 04
Laborers.....	804	485 57
Switchmen, watchmen and flagmen.....	210	675 67
Bridge tenders and pump men.....	48	507 62
Soliciting agents.....		
Traveling passenger agents.....	10	1,650 00
Contracting agents.....	21	1,500 00
Painters.....	67	534 00
Extra gang foremen.....		
Other employes.....	102	1,024 96

Unable to state what proportion of this number are employed in the State of Missouri.

J. C. McMULLIN, Vice-President.

**ANNUAL REPORT OF THE ST. LOUIS & SAN FRANCISCO
RAILWAY TO THE BUREAU OF LABOR STATISTICS AND
INSPECTION, FOR THE YEAR ENDING JUNE 30, 1886.**

Class.	No. em- ployes.	Average an- nual salaries.
General officers.....	13	\$3,000 00
Assistant and division superintendents.....	7	2,500 00
Civil engineers.....	4	3,000 00
Master mechanics.....	1	3,000 00
Roadmasters and bridge foremen.....	17	1,800 00
Clerks.....	157	900 00
Machinists.....	181	1,200 00
Passenger conductors.....	26	1,200 00
Freight conductors.....	73	1,300 00
Locomotive engineers.....	135	1,500 00
Firemen.....	141	720 00
Wipers	100	420 00
Baggagemen.....	23	720 00
Brakemen.....	183	720 00
Station agents, not telegraph operators.....	36	840 00
Station agents, also telegraph operators	30	840 00
Telegraph operators, not station agents.....	46	600 00
Carpenters	191	900 00
Section foremen.....	88	500 00
Section men.....	435	400 00
Laborers.....	139	450 00
Switchmen and watchmen.....	24	600 00
Bridge tenders and pump men.....	21	1,200 00
Soliciting agents.....	3	1,200 00
Traveling passenger agents.....	1	1,200 00
Contracting agents.....	1	1,800 00
Painters.....	49	600 00
Extra gang foremen.....	7	600 00
Other employes.....	318	

A. DOUGLASS, Auditor.

ANNUAL REPORT OF THE CHICAGO, BURLINGTON & QUINCY RAILWAY IN MISSOURI TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING JUNE 30, 1886.

Class.	No. em-ployes.	Average an-nual salaries.
General officers.....		
Assistant and division superintendents.....		
Civil engineers.....		
Master mechanics.....		
Roadmasters and bridge foremen.....	2	\$1,140 00
Clerks.....	2	480 00
Machinists.....	6	950 00
Passenger and freight conductors.....		
Locomotive engineers.....	7	1,200 00
Firemen.....	2	900 00
Wipers.....	4	450 00
Baggagemen.....	3	360 00
Brakemen.....	10	536 00
Station agents, not telegraph operators.....	6	583 00
Station agents, also telegraph operators.....	16	516 00
Telegraph operators, not station agents.....	6	510 00
Carpenters.....	6	660 00
Section foremen.....	28	480 00
Section men.....	79	350 00
Laborers.....	18	370 00
Switchmen and watchmen.....		
Bridge tenders and pump men.....	2	480 00
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....	1	780 00
Other employes.....	8	330 00

JNO. L. LATHROP, General Auditor.

ANNUAL REPORT OF THE ST. LOUIS & HANNIBAL RAILWAY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING DEC. 31, 1886.

Class.	No. employees.	Average annual salaries.
General officers.....	5	\$1,304 00
Assistant and division superintendents.....		
Civil engineers.....		
Master mechanics.....	1	1,080 00
Roadmasters and bridge foremen.....	2	785 00
Clerks.....	5	480 00
Machinists and apprentices.....	23	600 00
Passenger conductors.....	1	900 00
Freight conductors.....	4	750 00
Locomotive engineers.....	5	960 00
Firemen.....	5	480 00
Wipers	5	450 00
Baggagemen.....		
Brakemen.....	8	575 00
Station agents, not telegraph operators.....		
Station agents, also telegraph operators, (commissions in addition).....	11	425 00
Telegraph operators, not station agents.....	1	600 00
Carpenters.....	7	600 00
Section foremen.....	14	420 00
Section men.....	40	300 00
Laborers	5	384 00
Switchmen and watchmen.....	1	420 00
Bridge tenders and pump men.....	7	490 00
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....	1	780 00
Extra gang foremen.....	2	510 00
Other employes.....	10	.420 00

E. C. CASE, General Manager.

**ANNUAL REPORT OF THE KANSAS CITY & SOUTHERN
RAILWAY TO THE BUREAU OF LABOR STATISTICS
AND INSPECTION, FOR THE YEAR ENDING DEC. 31, 1886.**

Class.	No. em- ployes.	Average an- nual salary.
General officers.....	2	\$2,400 00
Assistant and division superintendents.....		
Civil engineers		
Master mechanics.....	1	720 00
Roadmasters and bridge foremen.....	1	720 00
Clerks	1	300 00
Machinists.....	1	600 00
Passenger conductors and freight.....	1	840 00
Freight conductors.....		
Locomotive engineers.....	1	840 00
Firemen	1	480 00
Wipers	1	365 00
Baggagemen.....		
Brakemen	1	480 00
Station agents, not telegraph operators.....		
Station agents, also telegraph operators.....	7	2,940 00
Telegraph operators, not station agents.....		
Carpenters.....		
Section foremen.....	6	2,520 00
Section men.....	13	4,290 00
Laborers.....		
Switchmen and watchmen.....		
Bride tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....		
Other employes.....		

F. M. GREEN, A. G. M. K. C. & S. Ry.

**ANNUAL REPORT OF THE CHICAGO, ROCK ISLAND &
PACIFIC RAILWAY TO THE BUREAU OF LABOR STA-
TISTICS AND INSPECTION, FOR THE YEAR ENDING
JUNE 30, 1886.**

Class.	No. em- ployees.	Average an- nual salary.
General officers.....		\$3,600 00
Division superintendents.....	1	1,320 00
Civil engineers.....	1	1,500 00
Master mechanics.....	1	1,413 24
Roadmasters and bride foremen.....	6	492 84
Clerks.....	62	661 44
Machinist.....	63	1,118 60
Passenger conductors.....	34	1,157 40
Freight conductors.....	75	1,410 00
Locomotive engineers.....	74	795 24
Firemen	39	432 24
Wipers	11	557 52
Baggagemen.....	118	538 20
Brakemen.....	15	658 56
Station agents, not telegraph operators.....	25	517 32
Station agents, also telegraph operators.....	33	523 56
Telegraph operators, not station agents.....	40	580 32
Carpenters.....	22	545 40
Section foremen.....	330	252 00
Section men.....	157	326 28
Laborers.....	29	456 00
Switchmen and watchmen.....	16	456 12
Bridge tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....	1	1,500 00
Contracting agents.....		
Painters	3	751 80
Extra gang foremen.....	24	812 40
Other employes.....	102	504 36

W. G. PURDY, Vice-President.

**ANNUAL REPORT OF THE ST. LOUIS, ARKANSAS & TEXAS
RAILWAY IN ARKANSAS AND MISSOURI TO THE BU-
REAU OF LABOR STATISTICS AND INSPECTION, FOR
THE YEAR ENDING SEPTEMBER 30, 1887.**

Class.	No. em- ployes.	Total annual salary.
General officers.....	14 A & M	\$5,058 00
Assistant and division superintendent.....	1 " "	357 00
Civil engineers.....		
Master mechanics.....	1 A & M	315 00
Roadmasters and bridge foremen.....	3 Mo.	3,240 00
Clerks, general offices.....	62 A & M	4,663 20
Clerks, stations.....	6 Mo.	4,176 00
Machinists.....	6 "	5,940 00
Passenger conductors.....	7 A & M	1,428 00
Freight conduct. rs.....	35 "	6,426 00
Locomotive engineers.....	60 "	14,088 00
Firemen.....	60 "	7,344 00
Wipers.....	4 Mo.	1,500 00
Baggagemen.....	7 A & M	735 40
Brakemen	72 "	8,812 80
Station agents, not telegraph operators.....	5 Mo.	2,100 00
Station agents, also telegraph operators.....	2 "	1,140 00
Telegraph operators, not station agents.....	4 "	2,760 00
Carpenters.....	15 "	12,420 00
Section foremen.....	11 "	5,940 00
Section men.....	82 "	33,948 00
Laborers.....	24 "	10,800 00
Switchmen and watchmen.....	10 "	7,200 00
Bridge tenders and pump men.....	5 "	2,100 00
Soliciting agents.....	1 A & M	162 00
Traveling passenger agents.....		
Contracting agents.....		
Painters	1 Mo.	900 00
Extra gang foremen.....	1 "	600 00
Other employes.....		

W. P. HOMAN, 'Gen. Man'g'r.

NOTE.—The total average annual salaries of employes employed on entire line is based as regards the proportion in Missouri, on the proportionate mileage of the road in Missouri and Arkansas, viz.: 74.70 miles in Missouri; 355.34 miles in Arkansas.

**ANNUAL REPORT OF THE DES MOINES, OSCEOLA &
SOUTHERN RAILWAY TO THE BUREAU OF LABOR
STATISTICS AND INSPECTION, FOR THE YEAR END-
ING JUNE 30, 1887.**

Class.	No. em- ployees.	Average an- nual salary.
General officers.....		
Assistant and division superintendent.....		
Civil engineers.....		
Master mechanics.....		
Roadmasters and bridge foremen.....		
Clerks.....		
Machinists.....		
Passenger conductors.....		
Freight conductors.....	1	\$780 00
Locomotive engineers.....	1	900 00
Firemen.....	1	480 00
Wipers.....	1	540 00
Baggagemen.....		
Brakemen.....	1	480 00
Station agents, not telegraph operators.....		
Station agents, also telegraph operators.....	1	540 00
Telegraph operators, not station agents.....		
Carpenters.....		
Section foremen.....	2	480 00
Section men.....	4	343 20
Laborers.....		
Switchmen and watchmen.....		
Bridge tenders and pump men.....	1	240 00
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....		
Other employes.....		

JAS. DONOHUE, Superintendent.

ANNUAL REPORT OF THE ST. JOE RAILWAY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING MAY 31, 1887.

Class.	No. employes.	Average annual salary.
*General officers.....	3	
Assistant and division superintendents		
Civil engineers.....	2	
Master mechanics.....	1	\$720 00
Roadmasters and bridge foremen.....		
Clerks	1	720 00
Machinists	2	900 00
Passenger conductors } Freight conductors } Mixed.....	2	600 00
Locomotive engineers.....	2	1,080 00
Firemen	2	540 00
Wipers.....	2	540 00
Baggagemen.....		
Brakemen.....	8	540 00
Station agents, not telegraph operators		
Station agents, also telegraph operators.....	2	750 00
Telegraph operators, not station agents.....		
Carpenters.....	6	600 00
Section foremen.....	4	500 00
Section men.....	22	400 00
Laborers.....	15	360 00
Switchmen and watchmen.....		
Bridge tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters		
Extra gang foremen.....		
Other employes.....		

* Only one paid \$2,400.

JAS. B. WILDE, Treasurer.

**ANNUAL REPORT OF THE EUREKA SPRINGS RAILWAY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION, FOR THE YEAR ENDING SEPTEMBER 31, 1887.**

Class.	No. em- ployees.	Average an- nual salaries.
General officers.....	3	\$1,433 33
Assistant and division superintendents.....		
Civil engineers.....		
Master mechanics.....	1	1,200 00
Roadmasters and bridge foremen.....	1	720 00
Clerks.....	2	570 00
Machinists.....	1	2 50 per day
Passenger and freight conductors.....	1	1,080 00
Locomotive engineers.....	1	1,200 00
Firemen.....	1	720 00
Wipers.....	1	456 00
Baggagemen.....	1	600 00
Brakemen.....	2	657 00
Station agents, not telegraph operators } *	1	300 00
Station agents, also telegraph operators } *	3	800 00
Telegraph operators, not station agents.....		
Carpenters.....		
Section foremen.....	1	540 00
Section men and laborers.....	8	360 00
Watchmen.....	1	480 00
Bridge tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....		
Other employees.....	4	475 00

*Each is in other business outside.

POWELL CLAYTON,
Vice-President and M'g'r.

**ANNUAL REPORT OF THE CRYSTAL RAILWAY COMPANY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION, FOR THE YEAR ENDING DECEMBER 31, 1887.**

Class.	No. em- ployees.	Average annual salary.
General officers.....	1	
Assistant and division superintendent.....		
Civil engineers.....		
Master mechanics.....		
Roadmasters and bridge foremen.....		
Clerks.....		
Machinists.....	1	\$1 50 per diem.
Passenger conductors.....		
Freight conductors.....		
Locomotive engineers.....	2	2 50 "
Firemen.....	1	1 25 "
Wipers		
Baggagemen.....		
Brakemen	3	1 25 "
Station agents, not telegraph operators.....	1	25 00 per month.
Station agents, also telegraph operators.....	1	15 00 "
Telegraph operators, not station agents.....	1	50 00 "
Carpenters		
Section foremen.....	1	50 00 "
Section men.....	6	1 15 per day.
Laborers.....		
Switchmen and watchmen.....		
Bridge tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents		
Painters		
Extra gang foremen.....		
Other employees.....		

The road is operated by the Crystal Plate Glass Co., and business is nearly entirely confined to its material and product. C. W. BARNES, Treasurer.

ANNUAL REPORT OF THE CAPE GIRARDEAU SOUTH-WESTERN RAILWAY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING SEPTEMBER 29, 1887.

Class.	No. em- ployees.	Average an- nual salary.
General officers.....	7	\$1,055 00
Agents, clerks, etc.....	12	365 00
Shop hands, skilled and unskilled.....	15	355 00
Passenger train men.....	5	325 00
Freight train men.....	9	423 00
Engineers, firemen, wipers, etc.....	20	400 00
Miscellaneous laborers.....	10	300 00
Section foremen.....	8	420 00
Section men.....	50	325 00

T. F. WHEELER, Secretary.

**ANNUAL REPORT OF THE WABASH WESTERN RAILWAY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION, FOR THE YEAR ENDING JUNE 30, 1887.**

Class.	No. em- ployes.	Average an- nual salary.
General officers.....	19	\$4,226 83
Assistant and division superintendents.....		
Civil engineers.....	113	1,015 76
Master mechanics.....		
Roadmasters and bridge foremen.....		
Clerks.....	352	800 00
Machinists.....	332	605 94
Passenger conductors.....		
Freight conductors.....	367	785 60
Locomotive engineers.....		
Firemen.....	486	851 73
Wipers		
Baggagemen		
Brakemen.....		
Station agents, not telegraph operators.....	163	498 82
Station agents, also telegraph operators.....		
Telegraph operators, not station agents.....	85	475 20
Carpenters	386	642 67
Section foremen.....		
Section men.....	1,116	465 50
Laborers		
Watchmen.....	71	389 17
Bridge tenders and pump men.....	36	467 67
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....		
Other employes.....	64	1,226 77
Switchmen	113	815 20

D. B. HOWARD, Auditor

ANNUAL REPORT OF THE HANNIBAL & ST. JOSEPH RAIL-ROAD COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING DECEMBER 31, 1886.

Class.	No. em-ployes.	Average an-nual salary.
General officers.....	14	\$ 3,650 00
Assistant and division superintendents.....	2	1,950 00
Civil engineers.....	4	1,530 00
Master mechanics.....	2	1,750 00
Roadmasters and bridge foremen.....	9	1,109 00
Clerks.....	150	711 00
Machinists.....	98	781 00
Passenger conductors.....	12	1,022 00
Freight conductors.....	35	846 00
Locomotive engineers.....	72	1,124 00
Firemen.....	72	646 00
Wipers	78	457 00
Baggagemen.....	13	492 00
Brakemen.....	91	612 00
Station agents, not telegraph operators.....	22	877 00
Station agents, also telegraph operators.....	33	598 00
Telegraph operators, not station agents.....	44	627 00
Carpenters.....	223	677 00
Section foremen.....	59	522 00
Section men.....	258	336 00
Laborers.....	495	409 00
Switchmen and watchmen	66	668 00
Bridge tenders and pump men.....	17	463 00
Soliciting agents.....	1	1,500 00
Traveling passenger agents	3	1,233 00
Contracting agents.....	1	1,800 00
Painters.....	15	726 00
Extra gang foremen.....	18	764 00
Other employees.....	31	622 00

W. F. MERRITT, General Manager

**ANNUAL REPORT OF THE KANSAS CITY, ST. JOSEPH &
COUNCIL BLUFFS RAILROAD COMPANY TO THE BU-
REAU OF LABOR STATISTICS AND INSPECTION FOR THE
YEAR ENDING DECEMBER 31, 1886.**

Class.	No. em- ployes.	Average an- nual salary.
General officers.....	13	\$3,768 00
Assistant and division superintendents.....	2	1,950 00
Civil engineers.....	3	1,680 00
Master mechanics.....	1	2,400 00
Roadmasters and bridge foremen.....	11	1,149 00
Clerks.....	184	754 00
Machinists.....	64	665 00
Passenger conductors.....	14	901 00
Freight conductors.....	20	852 00
Locomotive engineers.....	52	1,134 00
Firemen.....	51	648 00
Wipers.....	44	508 00
Baggagemen.....	10	539 00
Brakeinen.....	53	581 00
Station agents, not telegraph operators.....	17	721 00
Station agents, also telegraph operators.....	41	607 00
Telegraph operators, not station agents.....	31	598 00
Carpenters.....	167	690 00
Section foremen.....	67	516 00
Section men.....	376	338 00
Laborers.....	197	387 00
Switchmen and watchmen.....	60	643 00
Bridge tenders and pump men.....	21	297 00
Traveling passenger agents.....	3	1,299 00
Contracting agents.....	1	1,800 00
Painters.....	20	558 00
Extra gang foremen.....	6	727 00
Other employes.....	23	533 00

W. F. MERRITT, General Manager.

**ANNUAL REPORT OF THE KANSAS CITY BELT RAILWAY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION, FOR THE YEAR ENDING JULY 1, 1887.**

Class.	No. em- ployes.	Average an- nual salary.
General officers.....	6	
Superintendents	1	\$2,400 00
Civil engineers.....	1	1,200 00
Master mechanics.....		
Roadmasters and bridge foremen.....	1	1,500 00
Clerks.....	9	600 00
Machinists.....		
Passenger conductors.....		
Freight conductors.....	5	850 00
Locomotive engineers.....	6	1,000 00
Firemen	6	550 00
Wipers	3	500 00
Baggagemen.....		
Brakemen.....	12	780 00
Station agents, not telegraph operators.....	1	1,000 00
Station agents, also telegraph operators		
Telegraph operators, not station agents.....		
Carpenters	2	800 00
Section foremen.....	2	950 00
Section men.....	10	600 00
Laborers.....		
Switchmen and watchmen.....	9	600 00
Bridge tenders and pump men.....		
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....		
Extra gang foremen.....		
Other employes.....	14	600 00

GEO. H. NETTLETON, General Manager

**ANNUAL REPORT OF THE KANSAS CITY, FT. SCOTT & GULF
RAILROAD TO THE BUREAU OF LABOR STATISTICS AND
INSPECTION, FOR THE YEAR ENDING DEC. 31, 1886.**

Class.	No. em-ployes.	Average compen-sation.
General officers.....	4	\$3,000 00 per y'r.
Department officers.....	9	2,500 00 "
Assistant and division superintendents.....	1	2,000 00 "
Civil engineers.....	6	99 00 per mo.
Master mechanics.....	1	3,600 00 per y'r.
Roadmasters and bridge foremen.....	3	100 00 per mo.
Clerks.....	169	67 75 "
Machinists.....	71	2 63 per day
Passenger conductors.....	4	100 00 per mo.
Freight conductors	24	86 85 "
Locomotive engineers.....	28	3 75 per day
Firemen.....	28	2 25 "
Wipers	20	1 35 "
Baggagemen.....	3	60 00 per mo.
Brakemen.....	70	58 75 "
Station agents, not telegraph operators.....	2	94 50 "
Station agents, also telegraph operators.....	19	38 10 "
Telegraph operators, not station agents.....	18	75 50 "
Carpenters	78	2 32 per day
Section foremen.....	17	47 35 per mo.
Section men.....	120	1 07 per day
Laborers.....	231	1 38 "
Switchmen and watchmen.....	72	58 55 per mo.
Bridge tenders and pump men.....	4	65 00 "
Soliciting agents.....	1	175 00 "
Traveling passenger agents.....	4	83 75 "
Contracting agents.....	1	125 00 "
Painters.....	14	2 48 per day
Extra gang foremen.....	4	62 00 per mo.
Other employes.....	158	60 00 "

GEO. H. NETTLETON, General Manager.

ANNUAL REPORT OF THE KANSAS CITY, SPRINGFIELD & MEMPHIS RAILROAD TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE YEAR ENDING DECEMBER 31, 1886.

Class.	No. em-ployes.	Average compen-sation.
*General officers.....		
Division superintendents.....	1	\$2,700 00 per y'r.
Civil engineers.....	5	110 00 per mo.
Master mechanics, (ass't).....	1	3,000 00 per y'r.
Roadmasters and bride foremen.....	4	91 00 per mo.
Clerks.....	6	55 00 "
Machinists.....	25	2 20 per day
Passenger conductors.....	4	100 00 per mo.
Freight conductors.....	20	90 00 "
Locomotive engineers.....	24	3 85 per day
Firemen	24	2 40 "
Wipers	24	1 35 "
Baggagemen.....	4	56 00 per mo.
Brakemen.....	40	52 50 "
Station agents, not telegraph operators.....	1	26 00 "
Station agents, also telegraph operators.....	14	49 75 "
Telegraph operators, not station agents.....	4	93 50 "
Carpenters.....	41	2 40 per day
Section foremen.....	18	50 00 per mo.
Section men.....	137	1 05 per day
Laborers.....	108	1 40 "
Switchmen and watchmen.....	24	45 00 per mo.
Bridge tenders and pump men.....	8	45 60 "
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters.....	6	2 25 per day
Extra gang foremen.....	4	60 00 per mo.
Other employes.....	28	45 00 "

* Same as K. C., F. S. & G. R. R.

GEO. H. NETTLETON, General Manager.

**ANNUAL REPORT OF THE KANSAS CITY, CLINTON &
SPRINGFIELD RAILWAY TO THE BUREAU OF LABOR
STATISTICS AND INSPECTION, FOR THE YEAR ENDING
DECEMBER 31, 1886.**

Class.	No employes.	Average compensation.
*General officers.....		
*Assistant and division superintendents.....		
*Civil engineers		
*Master mechanics.....		
Roadmasters and bridge foremen.....	2	\$100 00 per mo.
Clerks.....	5	26 00 "
Machinists.....		
Passenger conductors.....	3	100 00 "
Freight conductors.....	6	82 50 "
Locomotive engineers.....	9	3 75 per day
Firemen	9	2 25 "
Wipers	3	1 40 "
Baggagemen.....	4	36 00 per mo.
Brakemen	20	51 75 "
Station agents, not telegraph operators.....	7	20 45 "
Station agents, also telegraph operators.....	14	46 50 "
Telegraph operators, not station agents.....	2	52 50 "
Carpenters.....	9	2 34 per day
Section foremen.....	20	45 00 per mo.
Section men.....	87	1 05 per day
Laborers.....	5	1 39 "
Switchmen and watchmen.....	3	50 00 per mo.
Bride tenders and pump men.....	4	50 00 "
Soliciting agents.....		
Traveling passenger agents.....		
Contracting agents.....		
Painters		
Extra gang foremen.....		
Other employes.....		

* Same as K. C., F. S. & G. R. R.

GEO. H. NETTLETON, General Manager.

Class.	Missouri Pacific.	
	No em- ployes.	Average annual salary.
General officers.....	28	\$1,460
Assistant and division superintendents.....	4	1,782
Civil engineers.....	1	1,800
Master mechanics.....	1	2,100
Roadmasters and bridge foremen.....	10	892
Clerks.....	500	748
Machinists.....	331	795
Passenger conductors.....	45	1,170
Freight conductors.....	101	1,004
Locomotive engineers.....	193	1,306
Firemen.....	210	766
Wipers.....	81	522
Baggagemen.....	68	550
Brakemen.....	343	705
Station agents, not telegraph operators.....	52	792
Station agents, also telegraph operators.....	75	615
Telegraph operators, not station agents.....	121	615
Carpenters.....	380	741
Section foremen.....	132	550
Section men.....	807	403
Laborers.....	554	475
Switchmen and watchmen.....	330	691
Bridge tenders and pump men.....	60	392
Soliciting agents.....	.....	.....
Travelling passenger agents.....	4	468
Contracting agents.....	2	702
Painters.....	52	691
Extra gang foremen.....	58	903
Other employes.....	444	655
Total employes.....	4,983	28,1
Grand total employes.....	.....	.....

*Chicago & Alton report includes the whole line.

†St. Louis & Hannibal telegraph operators also receive commissions.

‡“St. Joe,” a private local road.

§“Crytal City,” a private local road.

||Eureka Springs, machinist receives \$2.50 per day.

¶St. Louis, Arkansas & Texas, report includes in some cases employes in

|||Kansas City, Ft. Scott & Gulf reports “nine department officers with a

STREET RAILWAYS.

STREET RAILWAYS.

But few reports have been received from Street Railway Companies in the State. Their inattention to this duty could not be corrected by a resort to legal measures in time for this report. Therefore we present in the succeeding pages such as are received, which probably show the general averages of wages paid and hours worked by employees in this branch of business:

**REPORT OF THE KANSAS CITY CABLE STREET RAILWAY
COMPANY TO THE BUREAU OF LABOR STATISTICS AND
INSPECTION FOR THE FISCAL YEAR ENDING JUNE 31,
1887.**

Employees—Occupation.	No employed.	Wages per day.	Average No. hours employed
Superintendent.....	1	\$6 50	15
Assistant superintendent.....	1	2 80	15
Clerks.....	3	3 00	
Master mechanics.....	1	5 50	
Civil engineers.....	3	3 00	
Steam engineers.....	2	2 10	10½
Conductors.....	51	2 50	
Carpenters.....	3		
Changers.....		60 00 per month	
Car-house men.....	15		
Drivers.....	45	2 10	10½
Gripmen.....	2		
Blacksmiths and machinists.....	19	2 50	
Blacksmiths' assistants.....	3	2 00	
Foreman—track.....	1	100 00 per month	
Lainp cleaners.....	1	55 00 per month	
Painters.....	3	2 50	
Starters.....	5	50 00 per month	
Track repairers.....	21		
Road machinery road master.....	1	50 00 per month	
Track layers.....			
Crossing watchmen and flagmen.....	11	50 00 per month	
Other employes.....	17	2 00	
Switchmen.....	5	45 00 per month	
Draughtsmen.....	1	125 00 per month	
Sand boys.....	2	25 00 per month	
Auditor.....	1	125 00 per month	
Cashier.....	1	100 00 per month	

GENERAL REMARKS.

The average number of hours to those not designated is 10 hours. I have arranged the wages per day above as close an average as I could give without going into detail.

F. A. TUCKER, Superintendent.

REPORT OF METROPOLITAN (KANSAS CITY) STREET RAIL-WAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE FISCAL YEAR ENDING OCTOBER 1, 1887.

Employees—Occupation.	No. em-ployed.	Wages per day.	Average No. hours employed
Superintendent and assistants	7	\$105 00 per month	10
Clerks	10	75 00 " "	9
Civil engineers assistants.....	27	100 00 " "	9
Conductors }	15	40 00 " "	14
Conductors }	65	45 00 " "	12
Carpenters	6	2 50 " day	10
Changers.....	10	1 25 " "	10
Car-house men.....	9	45 00 " month	10
Drivers.....	65	40 00 " "	12
Blacksmiths.....	3	65 00 " "	10
Blacksmiths' assistants.....	3	2 00 " day	10
Feeders.....	5	50 00 " month	12
Teamsters.....	8	1 35 " day	12
Foreman—track.....	2	100 00 " month	10
Foreman—stables.....	1	65 00 " "	10
Hostlers	30	1 25 " day	10
Horseshoers.....	3	60 00 " month	10
Harnessmakers	1	2 00 " day	10
Engineers.....	2	105 00 " month	10
Firemen and oilers.....	4	55 00 " "	10
Machinists and helpers.....	3	2 50 " day	10
Painters.....	4	2 00 " "	10
Starters.....	8	50 00 " month	12
Track repairers.....	15	1 75 " day	10
Gripmen	15	70 00 " month	14
Watchmen.....	8	50 00 " ..	10
Other employes.....	15	1 50 " day	10
Purchasing agent.....	1	.125 00 " month	9

R. J. McCARTY, Secretary.

**REPORT OF GRAND AVENUE (KANSAS CITY) STREET RAILWAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE FISCAL YEAR ENDING
—, 1887.**

Employes—Occupation.	No. em-ployed.	Wages per day.	Average No. hours employed
Superintendents.....	3	\$16 33½ for 3	12 each
Clerks.....	4	.....
Civil engineers.....			
Conductors.....	50	100 00 for 50	"
Gripmen.....	50	100 00 for 50	"
Carpenters.....	14	2 75 each	"
Changers.....			
Car-house men.....	4	1 50 each	"
Drivers.....	19	1 50 "	"
Blacksmiths and assistants,.....	10	2 45 average	"
Feeders.....	20	1 33½ each	"
Feed car drivers.....			
Foreman—track.....	3	12 30 for 3	"
Foreman—stable.....	1	1 66½	"
Horseshooers.....	1	2 25	"
Harnessmakers.....			
Lamp cleaners.....	2	1 50	"
Mill men.....			
Painters.....			
Starters.....	2	1 50	"
Track repairers.....	2	1 50	"
Track layers.....	40	1 87½ aver'ge	"
Watchmen.....	6	1 50	"
Other employes.....	10	1 33½ "	"
Engine house men.....	8	10 16½ for 8	"

GENERAL REMARKS.

It is a little difficult to make this report very accurately, as we are just beginning operation of our road, and are at the same time still constructing.

THOS. J. FRY, Auditor.

**REPORT OF UNION (ST. LOUIS) STREET RAILWAY COMPANY
TO THE BUREAU OF LABOR STATISTICS AND INSPEC-
TION, FOR THE FISCAL YEAR ENDING —, 1887.**

Employees—Occupation.	No. em- ployed.	Wages per day.	Average No. hours employed
Superintendents.....	1	\$4 00	15
Clerks.....	1	1 75	10
Civil engineers.....			
Conductors and drivers.....	40	2 00	12
Carpenters.....	1	2 50	10
Changers.....			
Car-house men.....			
Blacksmiths.....	1	3 00	10
Blacksmiths assistants.....	2	2 00-2 50	10
Feeders.....			
Feed car drivers.....	1	1 75	10
Foreman—track.....			
Foreman—stable.....	1	3 00	15
Hostlers.....	18	1 50	12
Horseshoers.....			
Harnessmakers.....	1	2 00	10
Lamp cleaners.....			
Mill men.....			
Painters.....			
Starters.....			
Track repairers.....			
Track layers.....	2	1 75	
Watchmen.....	1	1 75	12
Other employes.....	3 boys.	1 00	10

O. N. DUFFY, Secretary.

**REPORT OF TOWER GROVE & LAFAYETTE (ST. LOUIS)
STREET RAILWAY COMPANY TO THE BUREAU OF LA-
BOR STATISTICS AND INSPECTION, FOR THE FISCAL
YEAR ENDING ——, 1887.**

Employees—Occupation.	No. em-ployed.	Wages per day.	Average No. hours employed
Drivers.....	20	\$2 00 per day.	12
Blacksmiths.....	1	3 33 "	12
Blacksmiths' assistants.....	1	1 25 "	12
Feeders.....	1	1 50 "	12
Foremen—stable	1	75 00 per month	12
Hostlers.....	11	1 50 per day.	12
Watchmen	1	1 75 "	12

GENERAL REMARKS.

This road (bob-tail) is run under the superintendency of People's Railway.
JOSEPH PERRY, Secretary.

REPORT OF PEOPLE'S (ST. LOUIS) STREET RAILWAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION FOR THE FISCAL YEAR ENDING DECEMBER 31, 1887.

Employes—Occupation.	No. employed.	Wages per day.	Average No. hours employed
Superintendent	1	\$125 00 per month.	12
Clerks.....	1	75 00 "	12
Inspector.....	1	75 00 "	12
Conductors.....	30	2 00 per day.	12
Carpenters.....	3	2 75 & 2 50 "	12
Drivers.....	30	1 75 "	12
Blacksmiths.....	4	3 67, 3 00, 2 50, 2 34	12
Feeders.....	2	1 75 "	12
Foreman—stable.....	1	100 00 per month.	12
Hostlers.....	38	1 50 per day.	12
Harnessmakers.....	1	2 00 "	12
Lamp cleaners.....	1	2 00 "	12
Mill men	1	2 00 "	12
Painters.....	3	1, 3 00, 2, 2 00 pr d'y	12
Track repairers.....	2	1, 2 00, 1, 1 75 "	12
Watchmen.....	1	2 00 per day.	12
Other employes—tow men	3	1 75 "	12

JOSEPH PERRY, Secretary.

REPORT OF CITIZENS (ST. JOSEPH) STREET RAILWAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION FOR THE FISCAL YEAR ENDING —, 1887.

Employees—Occupation.	No. em-ployed.	Wages per day.	Average No. hours employed
Superintendent.....	2	\$3 33	12
Clerks.....	1	1 00	12
Civil engineers.....			
Conductors.....			
Carpenters.....	2	2 25	12
Changers.....			
Car-house men.....	2	1 50	12
Drivers.....	10	1 50	12
Blacksmiths.....			
Blacksmiths' assistants.....			
Feeders.....	4	1 25	12
Feed car drivers.....			
Foreman—track.....	1	1 25	12
Foreman—stable.....	1		
Hostlers.....			
Horseshoers.....			
Harnessmakers.....			
Lamp cleaners.....			
Mill men.....			
Painters.....			
Starters.....			
Track repairers.....			
Track layers.....			
Watchmen.....	1	1 25	12
Other employees.....			

JOSEPH A. CORBY, Secretary.

REPOET OF THE UNION (ST. JOSEPH) STREET RAILWAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE FISCAL YEAR ENDING _____, 1887.

Employees—Occupation.	No. em-ployed.	Wages per day.	Average No. hours employed
Superintendent.....	1	\$2 62 $\frac{1}{2}$	15
Clerks	1	1 66 $\frac{2}{3}$	10
Civil engineers.....			
Conductors.....			
Carpenters.....	1	1 66 $\frac{2}{3}$	10
Changers.....	2	1 50	14
Car-house men.....			
Drivers.....	15	1 50	14
Blacksmiths.....	1	2 16 $\frac{2}{3}$	10
Blacksmiths' assistants.....			
Feeders.....	1	1 60	14
Feed car drivers.....			
Foreman—track.....			
Foreman—stables.....			
Hostlers.....	8	1 33 $\frac{1}{3}$	14
Horseshoers.....			
Harnessmakers.....			
Lamp cleaners.....	1	70	10
Mill men.....			
Painters.....			
Starters.....			
Track repairers.....	2	1 50	10
Track layers.....			
Watchmen.....	2	1 50	14
Other employes.....			

GENERAL REMARKS.

We run our cars with a pay box. We hire conductors on occasions of large business, when we give them \$2.00 per day.

A. STEINACKER, Secretary.

REPORT OF THE JOPLIN (JOPLIN) STREET RAILWAY COMPANY TO THE BUREAU OF LABOR STATISTICS AND INSPECTION, FOR THE FISCAL YEAR ENDING —, 1887.

Employes—Occupation.	No. em. employed	Wages per day.	Average No. hours employed
Car house men	1	\$20 00 per month.	10
Drivers	2	20 00 "	10
Hostlers.....	1	20 00 "	10

CLAIB. CRAYCROFT, Treasurer.

CONVICT LABOR.

THE COMPETITION OF CONVICT LABOR.

The subject of convict labor as it relates to and affects free or "square" labor, has been discussed by State legislatures and by individual economists for many years, and various legislative experiments have been tried with unsatisfactory results, but the true solution of the problem appears not yet to have been reached in any of the States.

It is a self-evident truth that humanity requires the employment of our convicts at healthful labor.

It is equally patent that the convict should be required as nearly as possible to support himself, otherwise he becomes a burden upon the State, and the rich and the poor alike are taxed to support him in idleness.

Still, it is of prime importance, conceding that the prisoner must work, that the results of his labor should enter into competition as little as possible with the labor of honest mechanics outside the prison walls.

In most cases or classes of work the effect of convict labor upon the quantity of goods produced is too infinitesimal to control prices or influence the demand for "square" labor. It occurs to us that in the discussion of the effect of the competition of convict labor, the increase of taxation because of its non-employment should be taken into consideration.

During the session of the last (Thirty-fourth) General assembly a committee was appointed to consider this subject. It was composed mainly of gentlemen connected and in sympathy with labor organizations. We deem the report of sufficient importance to give it a place in these pages.

REPORT

OF THE COMMITTEE ON LABOR IN REGARD TO CONVICT CONTRACT LABOR.

To the Speaker and the House of Representatives of the Thirty-fourth General Assembly of the State of Missouri:

On the fourth day of February, 1887, Mr. Newman, Chairman of the Committee on Labor, introduced the following resolution, which was adopted by the House :

WHEREAS, There are now four bills before the Committee on Labor to abolish the contract system in the State prison, and parties have appeared before the committee in the interest of manufacturers and labor organizations for the abolishment of the present system of contract labor ; and,

WHEREAS, The said committee desire more accurate and full information in regard to the same ; therefore, be it

Resolved, That the Committee on Labor is hereby empowered to investigate the subject with power to send for persons and papers and to administer oaths, and to do all other things necessary for a full investigation of the subject.

In accordance with the above resolution, the committee beg leave to make the following report :

That they made as full and accurate examination of convict labor as was possible, considering the other duties imposed upon them as members of the General Assembly. That they made a thorough examination of the different systems of working convicts in this and other States, and have become convinced that the "lease" system, first attempted in this State in 1843, and again in 1874, is impracticable, unwise and is not to be entertained one moment by a thinking person. The system is cruel to the convict and embarrassing to the State ; it sets up a dual government, complicates accounts and banishes discipline.

THE PUBLIC ACCOUNT SYSTEM

As sought to be established by House bill No. 284 has much merit in it and follows the general system established by the Pennsylvania legislature, but it only aggravates and increases the competition to free labor by increased production to be thrown on the market at public sale at stated times, and an increased expenditure by the State with the adjuncts of political power in most cases attended by public plunder in prisons. "The State provides the plant, as it also must provide the raw material to be used in the manufacture of goods, but it also and absolutely controls the volume of product in any given industry."

THE PIECE-PRICE PLAN

Now in vogue in Ohio and other States is but an exaggerated form of the "contract" system, and in the language of the report of the prison labor reform commission of the State of New York: "Only a few years since there arose in this State a cry from the ranks of the laborer against the contract system. The result was the abolition of that system three years ago. Those who declared against the contract system not only did not object to the piece-price plan, but in some instances commended it. But a careful and painstaking examination in piece-price plan in practical operation, and where the comparative tests have been fairly applied, shows it to be clearly more oppressive and therefore more offensive to competitive free labor in certain respects than even the contract system. The system of labor known as the piece-price plan has been tested in several prisons, notably in New Jersey. The result shows that so far from meeting the objections of prisons labor competition, which had been the cause of the change there from the contract to the piece price plan, the latter was found to be a more serious competitor with free labor than the contract system. It was clearly demonstrated that more goods were manufactured and turned loose upon the market per capita than under the contract system, and that the State received less pay for it. Less hours of daylight in the winter and the botch work of beginners or of inferior workmen militated against the State it is true, but in order to meet the agreement with the employing agent or contractor, a greater amount of work and greater ratio of production was required. The State, becoming the manufacturer by this system, agrees to furnish a given quantity of manufactured goods within a specified time, as well as at a given price, and of necessity such goods must come up to the standard fixed by the

party who takes the product. If, from any cause—unskillfulness or viciousness, entering conspicuously into this estimate—these goods are damaged, or fail to reach the high standard of excellence fixed and passed upon by the contracting agent, they are of course rejected and the State is the loser. By this system also, citizen ‘instructors,’ employed by the contracting agent, may be placed in charge of the work of convicts. This is one of the objections urged against the contract system proper, as often, if not always and of necessity, interfering with prison discipline.”

This brings us down to the present system in our State prison, and the committee submits the following table as taken from the testimony of the warden and contractors of the penitentiary. It is full and shows the amount of the cost of labor, plant and other expenses for each of the contractors:

CONTRACTS FOR CONVICT LABOR, MISSOURI STATE PENITENTIARY, FEBRUARY 5, 1887.

CONTRACTS FOR CONVICT LABOR.—CONTINUED.

Average length of term of prisoners worked Feb. 5, 1887....		
Per ct. of waste- age.....		
Amount of stock kept on hand..		
Amount paid for labor per day..		
Current rate of interest.....		
Insurance		
Working capital employed.		
Amount produc- tion per year..		
Cost of plant....		
Title of contrac- tor		

A.....	\$20,000	\$175,000	\$85,000 \$40,000, 4 per cent. outside, 3 per cent. inside.	8 per cent.	\$77 63 Double the outside 5 per cent. requirement.	6 3-10 years.
B.....	20,000	150,000	50,000 \$77,500, 4 per cent. out., 3 per cent in.	"	85 68 Three times the out- 10 per cent. side requirement.	6 3-10 years.
C.....	22,000	.....	100,000 \$75,000, pay 3 per cent. more than is paid on the outside.	"	February 5, Double the amount \$2,250 per year \$107.	6 3-10 years.
D.....	.....	.....	.....	.....	.....	7 4-10 years.
E.....	11,000	96,000	80,000 \$10,000 at a rate of 2 per cent., 1 per cent. more than outside.	"	February 5, Lakes \$25,000 more 10 per cent. \$46. to run the same bus- iness than it does on outside.	5 2-10 years.
F.....	15,000	166,000 in 1886	50,000 \$21,000, 1½ in. 3½ out.	"	\$43 50 Double outside re-9 per cent. requirement.	4 9-10 years.
G.....	5,500	\$20,000 at a rate of double that on out-side.	"	February 5, \$19 50. 20 per cent of what is paid to the State.	4 7-10 years.

CONTRACTS FOR CONVICT LABOR.—CONTINUED.

BUREAU OF LABOR STATISTICS.

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Salesmen and wages paid...			
Taxes.....			
No. foremen and wages paid....			
Amount paid for labor Feb. 5...			
Tobacco for prisoners.....			
Free labor furnished			
Amount paid for warehouse....			
Amount paid for heating			
Amount paid for steam power..			
Title of contractor.....			

A ... \$50 00 per \$50 00 per month. month.	\$25 83 per month.	\$448 75	\$77 63 \$180 00 per year.
B ... \$35 00 per 46 87 month.	\$25 83 per month.	688 48	166 50
C ... \$50 00 per 13½ bu. coal per day month. at 12½ cents per bu.	\$28 67 per 5 men shop month.	\$1,000 per year.	185 00 6 at an average cost each \$22.
D ... \$50 00 per \$20 per month..... month.	\$17 50 per month.		148 00
E ... \$25 00 per \$20 00 per month..... month.	2 sweepers. 5 cents per man each week.	46 00 6 foremen average per week each \$21.50.	124 87 5 commission of 8 per cent.
F ... \$20 00 per \$20 00 per month..... month.	\$6 per mo. 2 cleaners.	43 50 1 Supt. \$2,000 yr., 5 cents per in a per week.	111 00 4 average \$3,750 per year.
G ... \$12 50 per \$10 00 per month..... month.	\$17 50 per 2 cleaners. month.	19 50 1 foreman at \$100 per month. My son in the house worth \$1, 400 per year.	

For the purpose of comparison the committee visited the city of St. Louis and examined the manufacturers of the same line of goods as near as could be done. We have refrained from giving the names of the business men of St. Louis for the reason that business men dislike to give their business methods. The committee, however, would state that the list embraces some of the best business men in the city, and the statements are not only reliable, but were given freely upon the assurance of not publishing names.

BUREAU OF LABOR STATISTICS.

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Salesmen and wages														
Cleaners and wages														
Per cent. of wastage														
Annual production.....														
Rent.....														
Heating.....														
Steam per month														
Water per month														
Firm.....	A.													
B.	\$7.50	\$340	Per month, \$75	50,000	10 per cent.	1 boy at \$3 and 1 girl at \$2 per week.	2 at \$100 per month each.							
C.	Per y'r, \$170.	\$250 per year	\$100 per year	130,000	None.	3 girls at \$2 per week each.	My own salesman at \$1,500 per y'r.							
D.	\$45 for six months.	\$340	Per month, \$100	80,000	10 per cent.	1 at \$2, 1 at \$1.50.	3, average salary of \$1,200 per year.							
E.	\$70 per year.	\$26.	Per year, \$800	28,000	10 per cent.	Boy, \$6 per week.	2, \$40 per month ; 1, \$60 per month ; 3, 6 per cent.							
F.	\$5		\$40	338	.....	Boy, \$3 per week.	5, average, \$1,600 per year.							
G.	\$15		\$104, Includ'g engin', Per week, \$155	150,000	.....	Boy, \$1 per day.	4 at \$9,000 per year.							
H.	\$200 per year.	Includ'g heat'g, \$20.	Collar shop, \$800 per year; harness and saddles, \$900.	600,000	Harness 15 per ct.; Porter, \$50 per mo., boy, \$15 per mo.	saddles, 20, Collars, 15 per cent.	14 at average salary of \$1,800 per year.							
I.	\$10		Per year, \$200.	\$2,700	.....	135,000 Harness, 15, collars, 2 at \$2 per day.	10 in 1885 at \$1,200 per year each.							
J.	\$20 year.		\$200 year	Pay no rent. If I did would pay \$1,500 per year.	40,000	3 per cent.	10; saddlery, 15.							
K.	\$75 year.	\$5600 year....	\$350 year....	100,000	20 per cent.	3 at \$11 per week.	8 at \$2,000 per year each.							

If contract system was abolished would you be able to sell your goods at a higher price?.....	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.
Labor cost for making 1 pair of shoes	\$5,000	\$60 cents.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stock kept on hand.....	\$5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average cost....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average number of articles made per mo.	\$300 per year.	16,000 dozen per week.	725 pair shoes per 60 cents week.	Overalls, 75 cts to \$1.35 per doz. jeans, \$1.85 to \$2.75 per doz.	66 cents.	\$3.75 per dozen.	Cost \$200 to make 60 doz coll's Imitation Scotch collar cost \$5. 25 per dozen.	\$5. 25 per dozen.	Cost \$200 to make 60 doz coll's Imitation Scotch collar cost \$5. 25 per dozen.	\$5. 25 per dozen.	Cost \$200 to make 60 doz coll's Imitation Scotch collar cost \$5. 25 per dozen.
Incidental expenses.....	\$5 per day...	5,000 pair...	5,000 pair...	50 cent...	50 cent...	50 cent...	\$100 per year.	\$100 per year.	\$100 per year.	\$100 per year.	\$100 per year.
Superintendent.	\$2,000.	\$5 per day...	5 per cent...	1, \$30 per \$4 per day week.	1, \$30 per \$4 per day week.	1, \$30 per \$4 per day week.	\$1,800 per \$1.00 per year year.	\$1,800 per \$1.00 per year year.	\$1,800 per \$1.00 per year year.	\$1,800 per \$1.00 per year year.	\$1,800 per \$1.00 per year year.
Firm	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K.

For the benefit of the members of the 34th General Assembly and others desiring to receive information on convict labor, and to make the foregoing tables more intelligible, the chairman divided the Committee on Labor into three sub-committees, consisting of three members each, whose duty was to condense the above tables and to make their decision as to the facts of competition between free labor and convict labor. On clothing and saddle trees—Messrs. Walsh, Warner and Martin; boots and shoes—Messrs. Satterwhite, Simmons and Curley; harness and saddlery—Messrs. Walton, Holland and Newman. As a result of their labors, they present the following tables and reports:

CLOTHING.

	Free labor. two firms.	Convict la- bor, one firm.
Number employees (female).....	115	45
Labor, cost one year.....	\$39,156 00	\$6,084 00
Labor, cost one day per employe.....	1 09	47
Labor, cost one year per employe.....	340 48	135 20
Foreman.....	4,160 00	2,600 00
Salesmen	9,750 00	
Cleaners.....	468 00	
Steam heating, rent and lighting.....	3,961 00	480 00
Incidental expenses	1,130 00	
Taxes.....	60 00	
Interest at 8 per cent.....	5,005 00	440 00
Insurance.....	145 00	600 00
Wastage,.....	880 00	1,638 80
Tobacco.....		104 00
Production per year.....	146,600 00	37,343 25
Cost of that production.....	64,735 00	10,946 00
Amount produced per employes.....	1,274 78	. 929 85

From the preceding table it will be found that a convict laborer produces \$829.85 value in goods to the free laborer \$1,274.78; or in other words the convict at a cost of \$135.20 per year produces two-thirds as much as a free laborer at a cost of \$340.48.

SADDLE TREES.

	Free labor.	Convict labor.
Number employes.....		175
Labor, cost one year.....		19,960 00
Labor, cost one day per employe.....		48
Labor, cost one year per employe.....		114 10
Foremen.....		18,000 00
Steam, heating, storage.....		1,510 00
Taxes	296 00	
Insurance		1,200 00
Interest at 8 per cent.....		8,400 00
Tobacco.....		448 75
Wastage.....		8,750 00
Production per year.....		175,000 00
Cost of that production.....		49,832 75
Amount produced per laborer.....		1,000 00

As the committee failed to get the testimony of a large manufacturer in the above business while in St. Louis, no comparison can be deducted from the figures. But we append the testimony of Mr. John Burbank, a small saddle tree manufacturer located at St. Louis, given before this committee at their room Feb. 2, 1887.

I am in the business of manufacturing saddle-trees. From 1860 to 1870 there were nineteen shops in St. Louis employing 400 men. Now there are only two shops, my own, in which is employed two men besides myself and son. The other shop is run by my old partner who employs one man besides working himself. One of my men I pay \$1.50 per day, the other \$1.25. The men work ten hours and sometimes more when I have an order to fill. Saddle-trees formerly sold at \$32 per dozen, now they are sold for \$16. From 1860 to 1870 wages were from \$2.50 to \$2.75 per day. Wages have reduced more than 100 per cent. With machinery thirty to forty men can do the same work as 100 without machinery. No over-production in our line of business. Find market but have to come down to Sullivan's prices. The low prices and wages all due to penitentiary work. One man can make three per day on the outside at cost in wages of \$1.25. One man in pen makes as many at a cost of only forty cents for wages. The cost

of material in one dozen saddle-trees is as follows: Wood, \$2.15; covering, \$4.80; leather, \$6.00; other articles, \$2.40. The reason I keep on making the goods is the hope of trade and prices getting better, and being an old man and not able to do anything else, am compelled to eke out my living at this business. Can suggest no remedy.

MENS' BOOTS AND SHOES.

	Free labor.	Convict labor.
Number laborers.....	78	230
Labor, cost one year.....	\$38,532.00	\$33,696.00
Labor cost one day per laborer.....	1 58	47
Labor cost one year per laborer.....	443.04	146.50
Foremen.....	1,976.00	19,448.00
Salesmen	9,000.00	10,800.00
Superintendent.....	1,560.00	
Cleaners.....	312.00	
Steam, heating, sent and lighting.....	18,876.00	1,470.54
Incidental expenses.....	1,248.00	
Taxes	152.00	185.00
Interest at 8 per cent.....	6,560.00	9,760.00
Insurance.....	570.00	1,125.00
Wastage.....		2,250.00
Tobacco		1,000.00
Production per year.....	150,000.00	300,000.00
Cost of that production.....	78,786.00	76,744.00
Amount produced per laborer.....	1,937.18	1,317.39

LADIES', CHILDREN'S AND MISSES' SHOES.

	Free labor, 3 firms.	Convict labor, 2 firms.
Number laborers	220	185
Labor cost one year.....	\$121,316 00	\$28,860 00
Labor cost one day per laborer.....	1 77	.50
Labor cost one year per laborer.....	551 43	158 75
Foreman.....	7,800 00	11,648 00
Salesmen.....	11,400 00	10,950 00
Superintendent.....	2,000 00	2,000 00
Cleaners.....	1,664 00	
Steam, heating, rent and light.....	5,180 00	3,032 00
Incidental expenses.....	1,820 00	
Taxes.....	74 00	235 87
Interest at 8 per cent.....	7,240 00	12,480 00
Insurance.....	1,238 00	1,035 00
Wastage.....	13,000 00	2,934 98
Tobacco.....		494 00
Production per year.....	566,648 50	258,000 00
Cost of that production.....	175,530 00	72,733 88
Amount produced per laborer.....	2,575 63	1,383 79

HON. HENRY A. NEWMAN, *Chairman of said Committee:*

MR. CHAIRMAN:—Your sub-committee appointed to estimate the average cost of various items, and make a comparison of the main ones which enter into the manufacturing of boots and shoes by convict and free labor, respectfully report that, from the preceding table and evidence before us, we find the general average to be as follows: In manufacturing ladies' and children's shoes, convict labor is fifty cents, and free labor for males, \$2.28; females, \$1.03 per day, taken together, male and female free labor averages \$1.77 per day. On this basis males cost four and one-half and females two times as much as convicts. Free labor requires one foreman to twenty-nine employees, and convict labor one to nineteen convicts. Fourteen in outside shops,

average wages per day, are \$3.38, and inside shops, \$3.08. In outside shops it costs about three cents per day for each employe to do the cleaning, etc., while inside the State furnishes janitors free. Outside shops do not furnish any free tobacco, while inside each convict gets about five cents worth per week. On the outside steam power, heating and lighting cost for each employe per day eight cents, and inside six cents. Average rate of insurance, free shops, \$2.53, and convict shops \$3.25 per hundred. Wastage by free labor, about eight per cent., and convict nine and one-half per cent.

In the manufacturing of men's boots and shoes, operators pay, on an average, for convicts, 47 cents, and for free labor, males, \$1.67, and females, \$1.16 per day. By employing an equal number of each, free labor would cost \$1.42 per day, but at the present ratio it is \$1.58. Free labor requires one foreman to thirty-nine laborers, while convict shops require one to fourteen convicts. Foremen in shops outside get \$3.17, while in the penitentiary shops they get \$3.67 per day. Janitors' work cost for each free laborer one and one-fourth cents per day, while in convict shops the State furnishes janitors free. Outside operators give no tobacco, while inside convicts get about eight cents worth per week. In free labor steam, rent, heat, etc., cost for each employe \$242 per year, and in the penitentiary only \$6.40. In this line rate of insurance, as given, is \$1.50, both outside and inside shops. Each free laborer produces in goods \$1,923.18 per year, while convict only \$1,317.30. Therefore, three convicts will do but little more than two free laborers.

From a brief investigation of the preceding facts, it is our opinion that operators who employ convicts under the present system can produce goods about twenty-five per cent. cheaper than those who employ free labor.

J. D. SATTERWHITE, Chairman,
J. R. SIMMONS,
J. J. CURLEY,

HARNESS, COLLARS AND SADDLERY.

	Free labor, 3 firms.	Convict labor, 1 firm.
Number employes.....	345	180
Labor cost one year.....	\$186,420 00	\$27,222 00
Labor cost one day per employe.....	1 73	48 $\frac{1}{2}$
Labor cost one year per employe.....	539 76	151 17 5-9
Foremen.....	11,180 00	30,550 00
Salesmen	53,200 00	
Cleaners.....	3,744 00	
Steam heating, rent and lighting.....	10,630 00	1,292 40
Incidental expenses.	1,000 00	
Taxes.	2,700 00	106 50
Interest at 8 per cent.....	76,600 00	5,760 00
Insurance.	3,760 00	2,325 00
Wastage	9,321 00	2,802 40
Tobacco.....		688 48
Production per year.....	835,000 00	150,000 00
Cost of that production.	313,984 00	70,316 94
Amount produced per laborer.....	2,420 26	833 33

From the above it will be seen that while a convict produces over one-third as much as a free laborer his wages are about only one-fourth as much; that while one free laborer produces nearly four and one-half times as much as his labor cost, the convict produces five and one-half times as much. Consequently the committee are compelled to acknowledge that convict labor produces the above class of goods much cheaper than the free laborer.

When visiting the penitentiary the committee obtained facts which they could not include in the table and which will be found to present the private opinions of the convict contractors and the manufacturers employing free labor, and which will be found to give valuable information to anyone desiring to further investigate the subject of convict contract system of labor. Below will be found the testimony of each person under oath:

CONVICT CONTRACTOR.

F.

I employ sixty men absolute at 50 cents each per day; all over, 50-cents per day each. The cost of my plant is \$15,000; insurance on my business is \$21,000, on which I pay a rate of one and one-half per cent.; I have paid three and one-half per cent.; on the outside of the penitentiary would not pay a higher rate than three-fourths per cent.; I employ a capital of \$50,000 and did a business of \$166,000 in 1886; takes double the amount of capital and stock to run the same business inside penitentiary walls than on the outside; convict labor causes a wastage of nine per cent.; employ four foremen at \$20 per week each, one at \$15 and a superintendent at \$2,000 per year; consider myself worth \$3,000 per year to any man in my line of business; employ four salesmen—two at \$1,500 and expenses per year each, two on commission of five per cent., one getting \$3,000 per year and the other \$4,000; give the convicts tobacco to the amount of five cents per man each week; the State furnishes me free two cleaners; manufacture from \$5,000 to 6,000 and 7,000 pair per month.

By Mr. Holland: What is your average production per month? Cannot tell because of my inability to do so.

Manufacture medium class goods; could not sell a shoe if I was compelled to brand my production as convict made; whole prison of Missouri don't produce \$1,000,000 of goods a year; pay from thirty to thirty-six cents per foot for leather for uppers; scrap heel leather from fourteen to thirty-five cents per pound; pay \$2,000 per year for clerk hire; sell most goods in Missouri and Kansas, and part in Illinois and Arkansas; have not shipped an invoice of goods to St. Louis for six or seven years, because the St. Louis buyers can purchase from city manufacturers cheaper than they can from me; if I had my plant in St. Louis no inducement could be offered to get me in convict contract work again.

D.

Know nothing about the books of the firm; do not know how much capital stock they carry, insurance, or amount of production per year; we manufacture boots and shoes; the footing is done by free labor in Chicago; the stock is shipped here and we put on the sole; everything is cut in Chicago; we make here in the penitentiary from 500 to 530 pair of boots per day; employ 100 men absolute at forty-five cents

each; up to 140 at forty-five cents; all over, fifty cents; am furnished by State four men for cleaning.

B.

Employ a capital stock of \$300,000; produce annually \$150,000; cost of plant, \$20,000; carry \$50,000 insurance on the inside of penitentiary on which I pay a rate of three per cent.; carry from \$25,000 to \$30,000 on the outside for which I pay a rate of three-fourths per cent.; convict labor wastes ten per cent. of production; lost by fire several years since, \$12,500; could run the business in St. Louis on from \$40,000 to \$50,000, while it would take \$150,000 in the penitentiary; the firm employs nineteen square men at a salary each of \$1,550 per year; also employs a clerk at \$1,100 per year; would take six salesmen at an average salary of \$3,000 each to work for the convict contract establishment alone; the sales house is in St. Louis; pay freight both ways—on raw material and products—before the goods are placed on the market; have no special freight rates; sell our goods everywhere; a square man can sew around the collar as many as four dozen collars per day; a convict at best sews only eight per day; make no scotch collar in prison; one man in prison can sew four and one-half dozen thong sewed middle seam; one man can stuff from twenty to twenty-four; imitation, one man can do thirteen; an outside man, eighteen; one buckler outside can do as much as five convicts; have seventy-five men making harness, all buggy harness; don't employ as many convicts as we did two years since, because I can't sell the goods low enough; buy goods ready made cheaper than we can make them; child labor has destroyed the profit in making collars; a fifteen-year-old boy can do as much as a man on account of his fingers being more nimble; we are compelled to use better stock of leather on the inside than on the outside; lost \$30,000 by the fire some years since.

A.

Am engaged in the business of manufacturing saddle-trees; my plant is worth \$19,000: I pay an insurance rate of three-fourths per cent. on the outside of prison, and three per cent. on the inside; carry \$40,000; lost \$9,000 by the fire several years since; prison officials were to blame, as they were to have my new quarters ready and I had let my insurance run out on that account; before the fire the rate was two per cent., afterwards three per cent.; in the old building paid three and one half per cent.; pay for 150 men forty cents each per day; over that, fifty cents; the waste in convict work is five percent; pro-

duce \$175,000 per year; overseers, clerk hire and myself pay in wages \$18,000 per year.

Have a capital of \$85,000; can do my business fifty per cent. cheaper outside prison walls; sell most in south and west; do not sell in the east; cannot compete with eastern goods; trees I did sell for \$15 per dozen, I am now compelled to sell for from \$8 to \$8.50; the Indiana saddle-tree manufactory works boys and girls and sells cheaper than I can produce with my labor; when I was in St. Louis some time since, tried to sell an order to Meyer, Bannerman & Co., who told me they could buy from Burback from ten to fifteen per cent. cheaper; hold a patent on nothing but an iron or steel fork; the effect of branding goods would abolish the system of labor; would rather see the system abolished than to be compelled to brand goods; get more or a better price for my trees than the free labor commands.

G.

Manufacture jeans pants, overalls and jackets; cost of plant, \$5,500; carry an insurance of \$20,000, at a rate of two per cent., one per cent. higher than on the outside of prison; my sales amount to about \$45,000 per year. The wastage by convict work in January is twenty per cent. of the amount I paid the State; legal rate of interest, eight per cent.; have one foreman to whom I pay \$100 per month; personally superintend the business. My son is also with me and is capable of running the business as well as I am; consider him worth \$1,400 per year; produce eight dozen jeans pants and four or five dozen overalls per day, at a cost of \$3.00 per dozen for jeans pants, and \$2.00 per dozen for overalls, and some of the last cost \$2.50 per dozen; the tobacco furnished the convicts cost me \$2.00 per week; am furnished free two sweepers; worked eighteen and one-half men over my average; some days short twenty; the average length of term of the convicts worked by me is four and three-fourth years; pay one-half of the men, who must be first class, fifty cents per day; the other one-half, forty-five cents per day.

E.

We manufacture ladies' misses' and children's shoes; cost of plant, \$11,000; carry an insurance of \$10,000, for which we pay a rate of two per cent.; our wastage from convict labor is ten per cent.; we produce annually \$96,000; employ a working capital of \$80,000; current rate of interest, eight per cent.; pay for labor per day, \$122; we are compelled to keep a stock of \$10,000 more on the inside than on the outside; keep employed ninety-two men at 45 and 50 cents;

for sixty, pay 45 cents ; all over, 50 cents ; employ six foremen, at an average salary of \$21.50 per week ; employ five salesmen ; pay them a commission of eight per cent.; pay five cents per week for tobacco for each man ; are furnished two cleaners free; manufacture eight months in the year, 300 pair per day ; get supplies in New York and Philadelphia ; no difference in paying for supplies between inside and outside manufacturer; sell mostly in western Missouri, Kansas and Nebraska ; convict labor does not rule the market or establish the price of goods. (To substantiate this a letter was shown received from a salesman in Kansas who had been in his employ since August, 1883, in which he said that he finds merchants selling the St. Louis make of "Newport ties" at sixty-seven and one-half and seventy cents.) Our price is eighty-five cents ; can't make and sell them for less ; our price for low ties is eighty-five and ninety cents ; the same goods are sold in Maryville, Mo., at seventy-five and eighty cents ; all grain shoes sell at \$1.75 and \$1.80 ; can't make them at less cost than \$1.75 ; Mr. Church, shoe dealer in Jefferson City, Mo., bought from Woolman, Todd & Co., of St. Louis, grain Newport at sixty-seven and one-half, which cost me not less than eighty-five cents to manufacture.

C.

Cost of my plant is \$22,000; carry an insurance of \$75,000; on which I pay one and one-half cent extra more than outside rate ; employ a working capital of \$100,000; work on an average of 215 men per day, whose waste per year amounts to \$2,250 ; employ seventeen men besides convicts whose wages average \$22 per week ; have six salesmen whose average salaries per year is \$1,800 ; pay for tobacco per year for convicts \$1,000 ; requires double the amount of capital on the inside than on the outside ; outside manufacturer regulates the market price ; the entire production of prison boots and shoes is not a fraction of one per cent. of the amount produced in the State of Massachusetts ; when the strike occurred in 1886 my business was injured on account of material getting scarce.

STATEMENT BY WARDEN MARMADUKE.

Before commencing his remarks, Col. D. W. Marmaduke gave the chairman of the committee a statement of the number of convicts employed by the contractors, February 5, 1887, the contract price of each convict, what each contractor pays for steam power, heating and storage room.

The engines and boilers are the property of the State and the shafting the property of the contractors; we make no rebate to any contractor; we pay Mr. Sullivan fifty dollars per month for the offal from his shop which we use for fuel under the boilers, thereby saving expenditure on wood and coal; furnish cleaners free of charge to all the contractors; the contractors pay for the number of men employed by him whether he has work for them or not; the contract and renewal of a contract is made by the Warden on the part of the State; the trouble with convict labor in the eyes of the public is not correctly viewed; now the public have an idea all the convicts are employed on contract work; January 28, 1887, there were 1654 inmates in the prison, of whom thirty-nine were females, and instead of 1615 males being employed in competition with free labor, only 923 were so engaged; and considering that it takes two and one-half convicts to do one square man's work there is only 378 in competition with honest labor; since I have been Warden three concerns have gone out of business—busted so to speak, working convict labor; one of the firms was manufacturing brooms, went from here to St. Louis where he is now doing a good business; have had some experience with convict labor; was running a coal mine and employed convicts at forty cents per day; can take 100 free men and put out more coal than can be done with 300 convicts; as far as branding is concerned, think it would be wrong to place an embargo on a contractor after making a contract with him; better abolish the system of labor; prison work does not control market. Made bricks by convict labor on State account, and tried to sell the product; went to Kansas City and found I could not sell as cheap as free labor sold;

could not furnish brick for the asylum at Nevada, Mo., as cheap as outside makers; favor convict contract labor.

Col. Bradbury, deputy warden, said:

That it took three convicts to do the work of one free and square laborer at any mechanical employment; favor convict contract labor because I think it is in the interest of the workingmen; it is a mistake to think convict labor is cheap labor; not over twenty-five or thirty men making horse collars in the prison now.

FREE LABOR MANUFACTURERS.

TESTIMONY TAKEN IN ST. LOUIS.

A.

CLOTHING.

I don't think convict work has interfered any more with our line of business, manufacturing jeans and overall goods, than in any other line of business, and I do not think prison made goods set the price in this city (St. Louis); we are not manufacturing those goods now.

B.

SHOE MANUFACTURERS.

Convict work certainly interferes with free labor in my class of goods in a great many different ways, and on some grade of goods sets price to a certain extent; prison made shoes are generally lower than mine, and to compete with them we are compelled to put our price to them; we find the same competition with outside manufacturers, but not in that way; if outside manufacturers are hard up they will sometimes cut prices.

C.

CLOTHING.

If 100 convicts were added to present force of manufacturing jeans pants and overalls it might possibly compete with me; if all the penitentiaries in the country were making overalls they would not come in competition with me; I have an unlimited demand for overalls, and do not think it would interfere with me if more convicts were put to making my class of goods; the present convict contract system does not

interfere with my trade; if it does I do not realize it; convict work does not fix price of my goods in the city; from remarks made by convict contractor in my line of goods, I gather he is very much discouraged with such labor.

D.

LADIES', MISSES' AND CHILDREN'S SHOES.

Convict labor fixes the price of shoes in this city by using the same stock we do and making as good style, finished shoe and selling to the trade here and other places in the State or at sometimes less than we can produce them; if the contract system was abolished we would be able to sell our goods at a higher price.

E.

Convict labor certainly fixes the price of shoes, for I am forced to sell at the same price they do; I believe if it was abolished I could find better market.

F.

CLOTHING.

Convict labor to a certain extent fixes price of my goods; our agents report that they meet with convict labor goods that are sold cheaper; if they come in contact with other manufacturers they will sometimes undersell; would rather compete with free labor than convict labor manufacturers.

G.

MEN'S BOOTS AND SHOES.

Convict labor fixes the price of goods I make in this city by reducing prices; if that system of labor was abolished I believe prices of goods would be better and labor higher; I believe if the State should use convicts in manufacturing and sell at auction the surplus every three months, it would be worse than the present system on the outside manufacturer.

By Mr. Simmons: If convict contract labor was abolished would you be able to sell your goods at a higher price and also pay more for labor?

Answer. I believe so.

By Mr. Simmons: Would not the consumer, the farmer and those

dependent upon the farm, be the ones to pay the raise in prices and wages, and at the same time not be able to sell the products of their farms any higher? Would it not work a hardship on more than it would help?

Answer. Maybe so.

H.

HARNESS, COLLARS AND SADDLES.

If contract system was abolished think we could sell for higher prices; would prefer the State to enter into the manufacture instead of convict contract system; those that work common labor usually lead in making prices, the result is of reducing prices, and this operates against honest labor; the margin of profit is less and necessarily forces the manufacturer of square labor to reduce the price of making; the contractor gets up as good finished work as the outside employer; collar business is light; make fifty or sixty dozen per week; could not tell the amount of production of harness and saddles per week or month; in our line of business do not keep the account separate; convict work fixes the price of my goods, in a measure, this way: The houses that carry on the business with convict labor canvass the same territory as ourselves, and furnish prices which we cannot disregard; purchase some few saddle-trees from Burback and a great many from Sullivan; there is comparatively little difference in the price paid for the same quality of goods; I cannot get goods from Burback from ten to fifteen per cent. cheaper than I can from Sullivan; can buy same trees a little cheaper from Burback; the contractor in the pen. can produce more with his 100 men than we can with our 100 men; a square laborer can sew round middle seam two and one-half dozen collars per day, and can stuff one and three-fourth dozen per day; in our shop one man makes the whole collar complete; he does not do one special part; we use as good material on the outside as is used on the inside; for middle seaming ordinary grade of collars we pay twenty-five cents to \$1.00 per dozen for sewing, \$1.50 per dozen for stuffing, seventy-five cents per dozen for buckling; imitation Scotch collar, all made by hand, pay mechanic for complete collar, \$4.00 per dozen; this does not include cutting, for which we pay seventy-five cents per dozen, blacking, say thirty cents per dozen; at a small estimate, a complete collar costs \$5.05 per dozen.

I.

SADDLERY HARDWARE.

The cost to make one dozen imitation Scotch collars, in labor, is \$5.25; in answer to question as to whether convict labor fixes the price of the sales of collars will say that we do not near the price as fixed by the prison labor. If the system was abolished we would not be able to sell our goods at a higher figure unless outside manufacturer raised the price; we meet greater competition from the free laborer, consequently the contractor does not regulate the price of my goods; the prison production is so small in comparison to outside manufacturer that it does not cut much of a figure; the outside manufacturer uses as good, in fact, better material than convict contractor, owing to superior advantages in being nearer the market, and as a general thing the free labor gives a superior finished article; have had personal charge of convict labor and can say that two men's work by piece outside is equal to three men inside; piece price plan is used in Ohio; before being adopted there, no able-bodied men could be let for less than seventy-five cents per day; we make an average of cost, of number of goods produced per man, and pay for that equal to seventy-cents to a man, to find price paid for piece-price man; the convict earns as much now as they did before; to make up price we had to use it as we had before under contract system; we bid for men the same as under contract system; we pay for men by piece instead of by day; we pay as work progresses; take buckles for instance, we pay from rough to finish so much per dozen or gross, and then the finish; we furnish instructors and State furnishes guards; we have right to object to work finished; the amount of production under piece-price plan is equal to that under contract system; contract system is the very best for State and all concerned; a good many goods are not manufactured in prison because they can be made cheaper on the outside; the trouble is we are compelled to divide our trade with Kansas City, Atchison, Kan., and other places, where ten years ago the trade was not known; not one-tenth of men at work now as there was ten years ago; the worst feature in prison is they are obliged to keep their men at work at all times; in dull season the men in prison stock up and in consequence have to sell at low prices; we used to manufacture our hames in the prison; now make them outside cheaper than we could inside; all brushes used to be manufactured in prison; now made on the outside on account of boys; the success of the contractor is due to his supervision and in keeping men at work; labor in my goods is twenty-five to thirty-three and one-third per cent. of

cost of goods; takes one-third more capital inside of pen. than on the outside; laboring men want the prison work abolished only in their trade.

J.

MANUFACTURING COLLARS AND WHIPS.

To a certain extent convict labor fixes the price of goods made by me; before pen. work commenced was doing good work; after Strauss started to work convicts, could not compete with him; before he started was doing a \$60,000 per year business; now am doing two-thirds as much; my business is decreasing so much that I will be compelled to quit in a year or two; if the system was abolished could then sell my goods at a higher figure, because there would not be so much production; there is an over-production which causes low prices; if you want to make the prison self-sustaining you would be compelled to keep up contract system; can't suggest any remedy for convict contract work; my selling territory is principally in the city; imitation Scotch collar it cost in labor \$5.00 per dozen to make; pay for making common kind of collar \$3.50 per dozen, others \$4.50 per dozen; manufacture fifty dozen collars per week.

K.

SADDLERY COMPANY.

Convict labor fixes the price of goods in this city to some extent by making hand-made work cheaper than we can, and if the system was abolished would be able to sell some goods at a higher figure; as to what remedy I would suggest for convict contract system, will say that I believe it could be regulated by charging \$50 for first year and about seventy-five cents per day after that time, or at least what he is worth; it costs in labor to make one dozen imitation Scotch collars \$5.50 on an average.

L.

Am in the business of manufacturing chairs; employ 200 men who now receive in wages twenty per cent. less than they did five years ago; there is no convict chair manufactory in this State (Mo.); my competition from that source comes from Indiana, Iowa and Michigan. The Detroit (Mich.) House of Correction is my greatest competitor, and as that institution pays for convict labor only from forty to fifty cents per day for each convict, and gets advantage of special freight rates, it is

enabled to rule the market price and thereby compel the outside manufacturer to sell his goods at the same price or stop his business, and if he keeps on in business he must almost necessarily cut down the wages of his workmen. The Detroit House of Correction, or rather the contractors in that institution, now make bids for the labor of United States prisoners, besides paying so much each day for their labor.

The trouble with convict labor is not in the amount of goods made, but the price for which the goods are made and the price at which they are sold. Prison contract labor and penitentiary made goods make the prices. Hoadley's law would to a great extent correct the error. This law provides that the goods made by convict labor must be sold at prices regulated by the market or outside competition.

Now as to the demoralizing effect of convict labor I will call attention to manufacturers of carpenters' tools and saddle trees. Five years ago there were five tool manufacturers in St. Louis, where there are none now. This class of goods is made inside of Ohio penitentiary, at Columbus alone. None other in the United States. The contractors have no taxes to pay, and really pay nothing for use of motive power, buildings or anything. Not many years since there were twenty-three saddle-tree manufactories in St. Louis, now only two. Where the twenty-three establishments employed 200 men there are now employed only six. The cause of this is the saddle-tree manufacturers in prison walls. The amount of goods made in the Missouri pen. can make the price in all the Southwest States. The Detroit chair manufactory makes the price of chairs as far west as Kansas.

As to whether branding convict-made goods would remedy the evil, will say no, but at the same time will say that such goods should be branded. A person will buy penitentiary goods almost wherever they are sold on account of cheapness. I would recommend that the convicts be worked on roads. By doing this the road-tax would be abolished. In Europe they are worked on roads, and in Texas they are worked on roads in chain gangs.

Would suppose that the rate of insurance in prison walls is from thirty to forty per cent. higher than on the outside manufacturer.

M.

I am of the manufacturing firm of N. O. Nelson & Co. We manufacture engines, mills and other machinery, and have a general railway supply depot. In regard to convict labor will say that the convicts must be kept at work, they are bound to be employed at something. Convict contractors can manufacture without much capital. Like the

first bill (Walsh's) reads, but it should be amended. Penitentiary goods rule the market. Reduction of prices and consequential reduction of wages due to improved machinery.

N.

ST. LOUIS, Mo., February 24, 1887.

MR. H. A. NEWMAN, *Chairman*, MR. FRED M. WALSH, *Jefferson City, Mo.*

GENTLEMEN—Your favor of 22d inst. is before me. Having just returned from a week's absence from my business I cannot well leave it to comply with your request. Am sorry I did not get home in time to meet you, as I should have liked to have been heard on the question of prison convict labor. I will endeavor to give you my opinion of the subject in writing.

I see by the papers that contractors claim that what they gain in cheapness of labor is lost by bungling work of convicts. The prison-made work is always more or less faulty, we all know, but it is not bad enough to make people pay a much higher price for square work. That prison contractors have not run the square shops out of existence in late years is, in my estimation, owing solely to the insecure feeling regarding the future of prison contracts, making it difficult to obtain, or undesirable to invest in prison shops the amount of capital necessary to furnish the costly and improved labor-saving machinery now used in outside factories. To instance this, I will take my new heelng machine which to heel 400 pairs of shoes per day requires the services of one man at \$3 and three boys at fifty cents per day, which together with a royalty of one-half cent per pair, the breakage, power and interest of \$1,000, (cost of the machine) will be fully \$7.50. Not long since I was praising this machine to one of my competitors, a prison contractor, after showing him the machine would heel 400 pairs per day, the reply I got was "I will take six convicts and do the same amount of work and need nothing but hammer and shavers," (a shaver is a small inexpensive knife, something like a small draw-knife). That under such vast advantages our convict-driving competitors do not drive us from the market is not flattering to their ability as manufacturers.

My opinion is that with my present equipment of machinery and labor at fifty cents per day I could drive every shoe factory in Missouri out of business in six months, for it requires very little more than strength and ignorance to run most of the machines of to-day and a cowhide tickling a man's back is a great persuader to energy. That the labor must be employed goes without saying. As a remedy against

its being employed at the expense of square men I suggest that statistics of the cost of square labor over the age of eighteen years be taken throughout the State, an average deducted therefrom and from the average price thus gained deduct a certain per cent. as the maximum difference between the worth of square and convict labor, and the State refuse any bids below that figure. Granted a law permitting security from sudden change, and there would be no difficulty in obtaining such price.

The argument that the outside manufacturer is at liberty to diminish his pay-roll is all wrong; if a man wants to be a successful manufacturer he must work the year round *and pay living prices*; his men cannot live on wind and must not have two, three or four months idle time in which to brood over their loss of time and become demoralized. The great difficulty will be for your committee to get details in a matter of this kind, as most men try to give their side the most favorable showing. Where a prison contractor can live at the rate of ten thousand a year the outside manufacturer must be content with ten hundred.

The above letter is from a manufacturer in St. Louis who was not in the city when the committee made a call upon his home.

Before concluding the report the committee would further call attention to part of the report of Hon. Carroll D. Wright, the commissioner of the bureau of labor statistics, of convict labor, also to the table of convict prices in thirty-one penal institutions, and for fifty-seven specified branches of industry, as taken from advance sheets of the Illinois report.

Mr. Wright's tables show that of the convicts engaged in productive labor in the United States the greatest number is that employed in the manufacture of boots and shoes, in which 7,476 males and 133 females are engaged; total prisoners engaged, 7,609. The next industry to boots and shoes is clothing, number engaged, 5,561; stonework, 4,876; farming and gardening, 5,569; furniture, 3,446; mining, 3,273. The industry employing the smallest number is lumber, in which only 228 are employed.

The State producing the largest amount of convict-made goods is New York, the value being \$6,236,320.98.

The next in rank is Illinois, producing \$3,284,267.50 worth of convict goods.

Indiana is third on the list, with a product of the value of \$1,570,901.37.

Ohio is the next in line, with a product of value of \$1,363,122.51.

Missouri stands the fifth on the list of States, \$1,342,020.07.

Pennsylvania, \$1,317,265.85.

Kansas follows Pennsylvania with a product worth \$1,270,575.77.

Tennessee comes after Kansas with only \$1,142,000.

Michigan, \$1,087,735.62.

The last of the States producing over \$1,000,000 worth is New Jersey, which foots up \$1,019,608.32.

All the other States and Territories fall below the million point; Dakota comes at the bottom of the list with a product of \$11,577.36.

VALUE BY INDUSTRIES.

Examining the values by industries it is found that boots and shoes lead the product, being \$10,100,279.61, or 35.13 per cent. of the whole product of the penal institutions of the country—\$28,753,999.13, the largest item, being for the manufacture of clothing.

In all other industries the product is less than \$2,000,000, the smallest being lumber, the value of which is \$63,890. The report shows that the penal institutions of the first-class employs 33,661 convicts on productive labor out of the total of 45,277, producing \$24,859,810.31 worth of product. This product would have required 27,912 free laborers to have produced it, or one free laborer to 1.21 convicts.

To produce the products of the industries of the whole country in 1880 there were paid in wages \$947,953,795, or \$1 in wages to \$5.66 in product.

CONTRACTORS' PROFITS.

The wages paid by contractors and lessees to States and counties for the labor of convicts, from which resulted a product of the value of \$28,753,999, was \$3,512,970, or \$1 in convict labor wages to \$8.19 of product.

THE BEST SYSTEM.

After reviewing at length the different plans resorted to in handling convict labor, Mr. Wright states that hand labor under the public account system is the best. He says:

This plan offers many advantages over any other that has been suggested to the bureau. It involves the carrying on of the industries of a prison for the benefit of the States, but without the use of power machinery, tools and hand machines only being allowed; the goods to be made to consist of such articles as boots and shoes, the coarse wol-

len and cotton cloths needed for the institutions or for sale to other institutions. Harness and saddlery and many other goods now made by machinery are not now made at all in prisons.

With such a plan in vogue throughout the United States there could be no complaint as to the effects of convict labor upon rates of wages or upon the sale of goods, either in price or quantity.

The convicts should be worked under the direction and supervision of the prison officials. None of the disadvantages arising under the contract system, or the piece price modification thereof, or under the public account system can be raised against the plan. Its adoption would leave the State free to undertake the very best and most humane efforts for the reformation of prisoners. It has been seen that the average age of the convicts of the United States is about twenty-six years. This consideration becomes of the most vital importance. Experience in the Pennsylvania penitentiary proves that goods made in this way find a market at fair prices.

POWER MACHINERY VS. HAND LABOR.

The chief aggravation in the employment of convict labor in productive labor arises from the use of power machinery. No plan which has been suggested or which may be involving economic employment of convicts can remove all competition, but any plan which reduces competition to the minimum, both in wages and in sales, commends itself to all those who oppose the present system.

"By the adoption of this hand labor plan the State would be relieved from the necessity of securing manufacturers of skill and experience. Any man is competent to manage a prison and conduct its industries if they be carried on under the hand system without the aid of power machinery. The disadvantage which must be placed over these great advantages that have been enumerated are, under the broadest consideration, trivial and of no great account. The objection to this plan, which has been proposed by many investigators, involves the abandonment of the idea that prisons must pay."

The plans which have been treated comprehend the majority of those which have been suggested to the bureau. The complaints against the contract system are clearly sustained by facts sufficient to make it an objectionable system, but it is shown that it is the most profitable. The only plan offered which does accomplish or approximately accomplish this is that involving the employment of convicts under the public account systems without the use of power machinery.

REDUCTION OF CRIME.

It is of far more consequence to the workingmen of this country to reduce crime than it is to adopt this system of labor. If there can be adopted a system of labor reducing the number of criminals the highest results will have been reached. Labor is more interested in securing the absence of crime and of criminals than in the question as to how the criminals shall be employed. The agitation of the convict labor question has brought to the public eye the condition of prisons and the question of crime, and of how to treat criminals more forcibly than could have been done by a simpler method.

The true interest of the workingmen demand as much study by themselves and their leaders of practical moral questions as the study of economic matters. Convict labor is of no great account compared with the presence of crime, and to avoid the presence of crime its commission must be prevented. The tendency to lessen terms of imprisonment has not been salutary. All who have studied the question are satisfied that professional crime and the class that habitually lives by violations of the laws might be well nigh exterminated by the perpetual seclusion of what is known as the incorrigible, who should always be separated from all convicts having within them any of the elements of reform.

There is but little discrimination, except in a few institutions, between criminal minded persons, incorrigibles and weak or defective minded persons. The solution of the convict labor question would be simplified if the incorrigibles could be excluded for life from society.

The chief advantage to society from the life seclusion of this class of criminals would be the increased number of the other class of criminals that would yield to reformatory efforts. Our prison convicts are young men not over 26 years old on an average. The convict labor question involves not only the system of work under which the convict shall be employed, but higher considerations of a more statesman-like treatment of the question of crime itself than has yet prevailed.

STATISTICAL RESULTS.

The following table embodies statistical results of the work done by Mr. Wright's staff in canvassing the various States:

GOODS MADE BY CONVICTS.

Industry.	Value.	Convicts em- ployed.....	Free labor neces- sary to perform same work....
Agricultural implements.....	\$664,090 00	651	529
Barrels	834,963 44	667	528
Boots and shoes.....	10,100,279 61	7,609	5,378
Brick.....	286,787 94	861	754
Brooms, brushes, etc.....	834,955 54	2,123	1,545
Carpeting.....	95,497 14	242	163
Carriages and wagons.....	1,989,790 00	1,376	1,155
Clothing	2,199,634 25	5,561	3,645
Farming, gardening, etc.....	762,313 03	3,569	3,817
Furniture.....	1,280,006 08	3,446	2,435
Harness and saddlery.....	1,374,404 00	1,455	1,033
Iron goods	1,159,097 00	1,165	997
Lumber.....	63,890 00	228	252
Mining.....	1,696,075 05	2,273	3,228
Public ways	1,046,779 10	3,089	3,088
Public works.....	242,547 13	611	631
Stone.....	1,315,202 26	4,876	3,160
Stoves, hollow ware, etc.....	1,254,125 69	1,845	1,277
Tobacco	462,499 00	763	564
Wooden goods	338,431 64	368	205
Miscellaneous.....	752,631 23	1,490	1,105
Total.....	\$28,753,999 13	45,277	35,534

CONTRACT PRICES IN THIRTY-ONE PENAL INSTITUTIONS, AND FOR FIFTY-SEVEN SPECIFIED BRANCHES OF INDUSTRY, TAKEN FROM ADVANCE SHEETS OF THE ILLINOIS REPORT.

Industries.	Prisoners.			Average price per prisoner day—cents...	Estimated earn- ings per day...
	Under contract.	Able bodied.	Lighter grade.		
Agricultural tools.....	174	136	38	50	\$87 00
Bedsteads.....	84	84	.....	50	42 00
Blacksmithing	23	3	20	45	10 35
Bolts.....	50	42	8	31.4	15 70
Bolts and nuts.....	107	70	37	74.11	79 30
Book-keeping	4	4	.....	45	1 80
Boots and shoes.....	2,439	2,256	183	51.54	1,257 44
Brickmaking	60	60	.....	77	46 20
Brooms	81	45	36	59.75	48 40
Brushes and wire work.....	200	120	80	26	52 00
Cane seating chairs.....	116	107	9	10	11 60
Cane-seat chairs.....	26	20	6	70	18 20
Carpenters and joiners' tools....	61	60	1	82.5	50 32
Carriage bodies and shafts.....	105	105	.....	76	79 80
Chairs	179	175	4	59.11	105 81
Chairs and cradles.....	162	162	.....	55	89 10
Chairs and furniture.....	104	104	.....	45	46 80
Children's carriages.....	35	25	10	76.75	26 85
Cigars	170	160	10	43.8	74 46
Cigars and cigar boxes.....	55	5	50	45.55	25 05
Clothing	40	40	.....	42.5	17 00
Collars.....	60	60	.....	63	37 80
Cooperage	451	408	43	61.5	277 59
Cutting and dressing stone.....	118	115	3	53.25	62 83
Dressing granite.....	67	67	.....	66.65	44 62
Dressing granite and marble.....	60	40	20	20	12 00
Dressing marble.....	93	85	8	54.5	50 68

CONTRACT PRICES, ETC.—CONTINUED.

Industries.	Prisoners.			Average price per prisoner day—cents...	Estimated earnings per day..
	Under contract.	Able bodied.	Lighter grade.		
Farm implements.....	120	120	.....	50	60 00
Foundry	31	.....	31	45	13 95
Furniture	97	67	.....	84.4	56 55
Hames and saddlery hardware...	114	100	14	33.8	38 53
Harness and collars	127	114	13	61.7	78 36
Harness and saddlery	203	203	.....	48.4	97 52
Heel-making	48	48	.....	16	7 68
Helpers	24	24	.....	45	9 80
Hollowware.....	193	110	83	56	108 08
Hollowware and castings	295	214	81	64.98	191 54
Hosiery and woolen goods.....	184	184	.....	47	86 48
Knitting socks	535	535	.....	17.6	94 52
Knitting and tailoring	61	61	.....	55.2	33 67
Laundry.....	126	126	.....	60	75 60
Machinists.....	63	12	51	45	28 35
Painters.....	39	29	10	45	17 55
Saddlery hardware.....	545	197	348	57.72	314 58
Saddle-trees.....	173	173	.....	42.12	74 61
Sewing machines.....	50	40	10	35	17 50
Shelf hardware.....	300	275	25	48	144 00
Shoemaking	387	305	82	42.57	164 75
Shoes.....	1,140	1,082	58	48.18	554 95
Stoves	1,045	1,007	38	53.4	558 03
Stoves and stove castings.....	80	80	.....	75	60 00
Wagons	504	354	51	72.33	292 95
Whips and brooms.....	121	98	23	59.5	59 89
Window shade rollers.....	15	15	.....	50	7 50
Wire and wire fence	143	140	3	81.8	116 97

CONTRACT PRICES, ETC.—CONTINUED.

Industries.	Prisoners.			Average price per prisoner day—cents...	Estimated earnings per day..
	Under contract.	Able bodied.	Light grade.		
Wire work	12	11	1	49.16	\$5 90
Wood workers	138	15	123	45	62 10
Totals.....	11,908	10,207	1,611	51.24	\$6,102 61

From the presentation of the facts and figures in this report it will be seen that the articles manufactured in the prison are made from fifteen to twenty-five per cent. cheaper than the same line of goods by free labor. From the table published in this report, taken from the investigation lately made by that eminent statistician, Hon. Carroll D. Wright, it will be seen that the industry mostly affected by this system of labor is that of shoes. From the table of the industries manufactured in the Missouri penal institution we find that the number of convicts at work in the shoe industry is over one-half of the number engaged in manufacturing on the 5th day of February, 1887. While the committee are convinced that the contract system, taking it all in all, is the best for the State and to all classes of people, so far as financial results are concerned, it is thought best to limit the number of convicts engaged in one line of manufacturing. Hence the committee favor the enactment of the substitute for all House bills in regard to the subject of the convict contract system. Differences of opinion may exist as to the extent of that limitation, but a careful examination of the subject by the committee, taking into consideration the natural increase of convicts from year to year, induces the committee to favor the proposition in the substitute of permitting only one-seventh of the prison population to work at any one branch of industry. Massachusetts limits the number on the various industries as follows:

“In the manufacture of men's, boys' and youths' boots and shoes, not more than one hundred and fifty; in the manufacture of women's, misses' and children's shoes, not more than one hundred and fifty; in the manufacture of hats, not more than one hundred and fifty; in the manufacture of brushes, not more than one hundred; in the manufacture of wood mouldings, not more than one hundred; in the manufacture of harnesses, not more than one hundred; or in any other industry, not to exceed one hundred and fifty.”

It may be said that this will bear harshly upon the present contractors who have, at much expense, put plants in the penitentiary and created a trade for their goods, but as the contracts do not expire till 1890 and 1891, sufficient time is given them to reduce their present working force and the amount of goods manufactured. It is as clearly the duty of the State to protect its citizens in their avocations as it is to protect a few contractors. New York and Illinois have, by a vote of the people, abolished the contract system at much expense and serious financial loss to the States. If the manufactured industry of prison labor is so diversified as not to bear so harshly upon one industry, but equal on all, the laboring element of the State will bear more patiently the burdens placed upon by the system of convict labor.

There are other industries that your committee would suggest that can be placed in the prison that would not create the competition that now exists. Take, for instance, the manufacturing of school desks and school furniture. That could be easily manufactured by a certain number of the convicts and furnished to the school districts of the counties at prime cost to the State. Part of the convicts could be employed, successfully financially, in the manufacture of iron bridges to be furnished to the counties. The scarcity of bridge timbers in certain portions of the State necessitates the building of iron bridges, which, if manufactured by utilizing convict labor, would be of far more benefit to the people at large than if kept employed, as at present, to the detriment of honest labor.

From the evidence before them the committee have not the time to present a table of comparative cost of articles manufactured, as it would necessitate the further investigation of the cost of the raw material entering into the calculation. This the committee refrained from doing, for the reason that business men have business methods of purchasing raw material which they do not desire to divulge. The tables presented fully explain the wages, costs of running the establishments, and the comparative advantages and profits the convict contractor has over the free manufacturer, or *vice versa*.

All of which is respectfully submitted.

HENRY A. NEWMAN, Chairman,
FRED. M. WALSH,
JNO. D. SATTERWHITE,
THOS. HOLLAND,
J. R. SIMMONS,
IRA B. WARNER,
T. C. MARTIN,
JOHN F. WALTON,
J. J. CURLEY.

FIRST ANNUAL REPORT
OF THE
STATE MINE INSPECTOR.

LETTER OF TRANSMITTAL.

OFFICE OF STATE MINE INSPECTOR, }
CITY OF JEFFERSON, Oct. 29, 1887. }

To THE HON. OSCAR KOCHTITZKY, *Commissioner of Labor Statistics and
Inspection, Jefferson City, Missouri:*

HON. SIR:—I have the honor herewith to submit my report for
year ending October 15, 1887.

Respectfully,
M. L. WOLFE,
State Mine Inspector.

INTRODUCTORY.

A law creating the office of Mine Inspector of the State of Missouri was passed by the Legislature last March, and I had the honor to receive that appointment last June, at which time I entered on the duties of that office. My knowledge of the mining territory of Missouri (except by report) was confined to Bates county. Through personal observation I find that the mining territory of Missouri, including coal and the various ores, extends from Mendota (north), on the Iowa State line, (south), to Splitlog Mine, in the extreme southwest county of the State. From Minden, on the Kansas line, to Vandalia, near the line of Illinois; and to Mine La Motte, near the line of Kentucky. It will be readily observed that it has been impossible for us, in the short space of time since we entered the field, to travel over, much less carefully examine and give full reports on all the mines and prospective mining territory in this vast area of country. We found many intelligent mine operators and miners who had never heard of the new mining law, especially in lead mines, zinc mines and iron mines.

That part of the law governing coal mines, passed in 1881, and amended in 1885, was incorporated in the new law without change, hence coal miners were familiar with it, except in a few isolated localities, while lead mining, in violation of the law, was more the rule than the exception. This violation was not intentional, therefore not criminal. We found many of the lead and zinc mines, and some of the coal mines, being worked in a desultory and primitive manner. With few exceptions, we found the mine operators ready to comply with the law where it was practicable.

We think that much good has been done by the application of the law to other than coal miners. In coal mines, in the true coal measures, where extensive veins of coal exist; in iron mines of great extent, and in lead and other mines where the ore is disseminated or exists in true veins, the law is admirable, and there is scarcely room for an amendment. It is only on "pocket" mines where men are mining on lots

200 feet square, and where the ore is liable to run very thin in the greater part of that limited piece of ground, that miners cannot comply literally with all the sections of the law, and we feel satisfied that it was not the intention of the framers of the bill to hinder or injure our poorer class of miners nor our mining industries. We hope our next Legislature will devote a portion of their valuable time to the consideration of this law, and make the proper amendments if in their wisdom they think it necessary.

EXTENT OF COAL FIELDS.

Our mining law says that the Mine Inspector must be a *practical* miner—a good provision, as practice without theory is vastly preferable to theory without practice. One who has given years to *practical* mining has had, perhaps, little opportunity to study geology, and it is not probable that the people interested in mines and mining will expect us to say anything in that connection. To write anything original on this subject would require more knowledge than we possess, but for the benefit of our fellow-miners, we submit the following:

COAL.

The origin of coal is no longer a debatable subject. All who have studied its characteristics agree that coal was once vegetable matter. It has been estimated that it requires ten feet of vegetable matter to produce one foot of coal. This being the case, where coal deposits have great thickness they will not be found to extend over much ground. Where coal is eighty to ninety feet thick, as has been found at some points in this State, we readily see that at no point could there have been a *growth* of vegetable matter 800 to 900 feet thick to form that much coal; hence we conclude that this matter has been aggregated by some agency (water) in a "pot," basin or depression, while vegetable, and then converted into coal. Some very thick pockets of coal have been found in Morgan, Cooper and Moniteau counties. One of these pockets held coal ninety-five feet in thickness, and strange to say contained in the crevices of the coal, beautiful pieces (in sheet form) of galena. This is a very unusual occurrence. At another point we saw coal sixteen feet thick overlying blende. How much blende there was has never been determined, as no work was done except for coal.

"Fifty-nine counties are in the coal measures, covering 27,000 square miles, 2,000 feet in thickness and containing twenty beds of coal."

The coal measures proper are in that portion of the State north of the Missouri river until they reach range thirty-two west, then they extend south of said river to the northwest corner of Jasper county, covering half of Barton, three-fourths of Vernon, all of Bates, one-third of St. Clair, all of Henry, Cass, Jackson, Lafayette, Johnson, Cooper, half of Saline, and one-third of Pettis. Benton has a little of the coal measure in the extreme western part.

The Lower Carboniferous includes Jasper, Newton, the northern portions of McDonald and Barry, all of Cedar, Dade, Lawrence, part of Benton, Hickory, St. Clair and Polk, nearly all of Greene and a portion of Christian and Stone counties, all south of the Missouri river; north of the Missouri river, part of Adair, Scotland, Clark, Knox, Lewis, Shelby, Marion, Monroe, Ralls, Pike, Lincoln, Montgomery, Calaway, Boone, St. Charles and Warren.

The Lower Silurian includes part of Benton, Hickory, Polk, McDonald, Barry, Stone, Christian, Camden and Moniteau, all of Taney, Ozark, Howell, Oregon, Ripley, Douglas, Webster, Wright, Dallas, Laclede, Morgan, Miller, Cole, Pulaski, Texas, Shannon, Carter, Wayne, Bollinger, Madison, Iron, Reynolds, Dent, Phelps, Crawford, Washington, St. Francois, Perry, Ste. Genevieve, Cape Girardeau, Jefferson, Franklin, Gasconade, Osage and Maries counties.

In this "age" are found nearly all the iron mines of importance. Lead and zinc also belong to this portion of the State, or rather "age," except in the extreme western part, where they are found in the Lower Carboniferous, especially so in Jasper county.

Dunklin, Pemiscot, New Madrid, Mississippi, Scott and Stoddard counties are in the Tertiary; also, a narrow strip bordering the entire length of the Missouri and Mississippi rivers.

It must be remembered that the coal measures are not supposed to be entirely underlaid with coal.

While the output from our mines will reach up into the millions of tons for the past year, it is no gauge to measure the value or extent of our coal deposits. The output is governed by the demand. With three months' preparation I presume Missouri could throw on the market sufficient bituminous coal to supply the United States. Hundreds of quarries and small mines are operated in fall and winter throughout the State. Their aggregate for the supply of mills, school houses, asylums, business houses and domestic uses throughout the State would reach a million tons.

The coal industry of the State is on the increase and will continue as the State increases in population and manufactories. The demand for miners is good in all the coal fields. Operators north and

south of the river write me to send them miners. They also write me that trade is good and the outlook never so good.

COST OF PLANT FOR WORKING COAL BY SHAFT, SLOPE OR DRIFT.

A site is selected as near the center of the mine as is possible, taking into consideration all the surroundings. A shaft, usually 6 x 12 or 18 feet, is sunk to the bottom of the coal. A building, with tower, is erected over the shaft. To produce ventilation the main shaft is divided by tight wooden partition and a stack built for upcast. The engine house is built 50 to 300 feet distant from shaft. Hoisting power is usually transmitted from engine by wire cable. This cable passes over a wheel near the top of the tower. The center of this wheel or pulley is as nearly over the center of the hoisting shaft as it is possible to place it. Heavy cross pieces of timber are placed in the shaft for support of guides for cages. These timbers are usually 4 x 6 inches, and placed two feet apart. This division makes two hoisting shafts, about 6 x 6 feet, so arranged that cages move alternately up and down at the same time. Where there is no other means of entrance and exit the miners enter and leave the mine in these cages. This ought to be avoided if possible. To avoid accident by breaking of engine, a powerful brake is in place to govern the drum or cylinder to which the hoisting cable is attached. The cages are provided with a safety catch, which is so arranged that in case the cable should break the catch stops the cage.

All shafts have landings at the surface, where the miners enter and leave the cages, and where all material used in the mine is placed in the cages. Fifteen to twenty feet above the surface landing is another landing for the coal. This landing is sufficiently high to allow the coal to pass over inclined screens and be discharged into railway cars. Movable gates are placed at the upper landing which rise with the cages. When the cages go down the gate covers the shaft until the cage returns, protecting the entrance between the upper landing and the tipple. Scales are placed between the landing and the tipple for weighing the coal, the proper credit given to the men working the room where the coal was mined.

Some of the coal mine plants are costly. They are usually built in proportion to mining territory owned or operated by the builders.

We have learned that two plants in Bates county, built by Keith and Perry Coal Company, cost as follows: At Mine No. 5, before any output of coal, \$23,000 were expended. At Mine No. 6, before a cross entry was cut, \$34,000 were invested.

DRIFT MINE.

Where a point is selected for mining (an outcrop of coal being at foot of hill or bluff) a drift or horizontal entry is made, of sufficient size to admit men and mules. After entering a short distance in a straight line, entries and cross-entries are made, the extent being governed by the coal deposit or vein.

According to the extent of the mining territory, building covering tipple, chute, screens, scales, etc., is erected at a cost varying from \$50 to \$250.

SLOPE MINE.

The term slope is synonymous with incline, or drift, descending from a level above the vein to the bottom of the vein. After reaching the bottom of the vein the working is identical with other coal mining and the cost of plants the same as for drift mining.

CONDITION OF COAL MINES, RELATIVE TO HEALTH AND SAFETY OF MINERS.

Our mines of coal taken collectively are in fair condition, as regards health and safety of miners. Small mines operated by poor men, are generally in the most unsafe and unhealthy condition.

Men who follow other vocations during summer, mine during fall and winter. Being distant from railways, they mine for home consumption, shipping their surplus.

They cannot afford boiler-iron covered cages with safety catches, the building of furnaces for ventilation, the securing of perfect drainage, &c., to place their mine in proper condition.

Some miners operate mines on a year lease, and run the mine for all there is in it regardless of the future. Having to do with this class of operators is sometimes very annoying. Safety catches are in almost general use, especially on cages where men are carried. The same may be said of covering cages with boiler-iron.

Mines of coal are never entirely free from gases. A mine may be apparently clear and free from gases at 6 p. m., and at 7 a. m. next day be filled with explosive gas, which an open light would instantly ignite. Choke damp frequently fills the mine at night, where the fan and furnace are not used. It is necessary to keep those means of ventilation in use to prevent the accumulation of gases.

We find some mine superintendents who are very incompetent, and were certainly not employed on their merits. Their incompetency causes the mine to be in bad fix, as to health, safety and possibly as to profits. Some mines have miles of courses with shale and soapstone top that slacks on exposure to the air, and is almost constantly falling. We have seen air courses closed up in a night from this cause. More of this material falls during the night than during the day, for the reason that the air at night contains more moisture, which is absorbed by the shale and soapstone, adding to its weight. A few days since we visited a mine, measured the air and found a great deficiency. On investigation we found a door had been left open in an unfrequented part of the mine, and the air was passing to the outcast without ventilating the faces.

Occasionally, underground "Bosses," through press of work or other cause, neglect to fill up the break-through made in the ribs between miners' rooms to let the air through, after the work had advanced and other holes had been made. Hence, the air instead of following the miner to his working face, was dissipated by passing through the distant breaks-through.

Air will follow a straight line to the upcast after entering at down-cast, unless forcibly turned by impenetrable walls to face of mine.

We have not received complaint from any mine in regard to want of props, and the miner is the best judge of the use of props.

It seems that miners become careless and indifferent to danger, and take many risks. Accidents that are frequent may be avoided with the exercise of judgment.

DOORS IN MINES

All extensive coal mines have doors at various points on their main and cross entries. A strong frame is built across the entry where the door is to be hung; at this point the door and brattice are made to close the entry air tight. This is done to turn the air around to the working face. A boy, called the trapper, is stationed here to guard the door and open and shut it for the mule drivers with their trains of coal. Should those doors be left open, the men at the face suffer for air. Up near the face where the concussion from firing would shatter down the doors, curtains of stiff canvas are hung across entries until the works advance sufficiently to maintain doors.

SCREENS AND WEIGHING.

All coal is now weighed as it comes from the miner's room and accounted for in that condition. Then after being weighed, which is done, at shaft mines, as it passes from the mouth of the hoisting shaft to the chute, a set of screens in an inclined position or revolving, is often arranged between the chute and cars which receive the coal. Where mines have no screens, often by contract, the men fork their coal with a fork similar to a hay fork. In other mines the coal is screened after being drawn to the surface, as a plasterer screens his sand.

WEIGHING OF COAL—AMENDED LAW.

The law regulating the weighing of coal was amended by the last (Thirty-Fourth) General Assembly, and is now as follows:

SECTION 1. That section 2 of an act entitled "an act to regulate the weighing of coal at the mines and to establish a just and uniform system of weights between employers and employes," approved March 18, 1885, be and the same is hereby amended by inserting between the word "act" and the word "said," in the fifth line of said section, the following words: "The miners employed by, or engaged in, working for any mine owner, operator or lessee of coal mines in this State shall have the privilege, if they desire, of employing at their own expense, a check-weighman, who shall have like rights, powers and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the said regular weighman; and the coal, while being weighed, shall be at a stand-still upon the scale or scales used for weighing same," so that the said section, as amended, shall read as follows: Section 2. The weighman employed at any mine shall subscribe an oath or affirmation before a justice of the peace, or other officer authorized to administer oaths, to do justice between employer and employe, and weigh the output of coal from the mines according to the provisions of section one of this act. The miners employed by, or engaged in, working for any mine owner, operator or lessee of any mine in this State, shall have the privilege, if they desire, of employing at their own expense, a check-weighman, who shall have like rights, powers and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the regular weighman. Said oath or affirmation shall be kept conspicuously posted in the weigh office, and any weigher of coal, or person so employed, who shall knowingly violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished by fine of not less than twenty-five nor more than one hundred dollars for each offense, or by imprisonment in the county jail for a period not to exceed thirty days, or by both such fine and imprisonment, proceedings to be instituted in any court having competent jurisdiction.

Approved March 31, 1887.

RAILROADS IN MINES.

Ties and iron railing are used in building roads to haul coal from the coal face to the foot of the shaft or surface, as the case may demand. Cars holding from six to thirty-five bushels of coal roll on the tracks, drawn by mules, men or machinery.

In low coal where mines are worked on a small scale the diggers contract to push their coal to foot of shaft or the mouth of drift or slope.

At some mines the men contract to push the coal from the face on the various branches to a point on the main track, where the top or bottom is cut out for a mule, which then takes it to the end of the line.

Many mines worked by slope have steam power near the tipple that takes the cars at the foot of the incline by a wire cable and draws them to the tipple.

MANNER OF MINING "LONG WALL."

In long wall mining the whole body of the coal is taken out in a breast as the works advance, allowing the overlaying strata to fall down behind the miners. This method is practiced where the conditions are favorable—veins of coal with black slate for roof and solid floor and roof free from water. The Lexington vein, extensively worked at Lexington, Higginsville, Corder, and over the river at Richmond, Camden and other points, is well adopted to long wall work. The vein is, on an average, of eighteen inches of merchantable coal. Overlaying the coal is, first, about twelve inches of black slate; over that a lime stone several feet in thickness with a good floor.

The twelve inches of slate falls with the coal; the slate is by the miner kept behind, together with his cutting, and the earth above gradually settles down on it. A portable car track is kept within two to four feet of the face of the coal. The miner loads his coal on the car and shoves it up or down the track a short distance, where a roadway is met going out through the gate to the surface or foot of hoisting shaft. There is no powder used in this manner of mining.

The miner cuts under the coal from two and one-half to three and one-half feet the full width of his room or space allotted him, and removes his cuttings back on opposite side of car track. The weight of the earth above gradually breaks the coal down. There is nothing now to do but break it in chunks so as to be handled, loaded and rolled away. In some mines it has to be wedged down. Few, if any, props are used in this manner of mining.

The current of air is generally good in long wall work, as it moves along the working face without making so many circuits, and having so much vacant territory to travel over.

MANNEER OF MINING "PILLAR AND ROOM."

Pillar and room plan of mining differs in mines, owing to surroundings. Main entries or galleries are driven through the mining territory from seven to twelve feet wide, owing to the nature of the roof, the extent of territory to be mined, etc.

All well engineered mines run double galleries, leaving from eight to twenty feet of coal between. Cross or butt entries are turned off those every 200 yards or thereabout to the right and left; and from those butt entries the rooms of the mine are turned. The rooms are driven parallel with main entries generally, and vary in width from fifteen to thirty feet. A pillar or pit is left between rooms from five to twenty feet wide, owing to nature of roof, floor and general surroundings. Every few yards the mine makes a break-through (holes through this rib) for air, and the mine boss fills up tight with slate, gob and lumber all but the last one made, that the air may go up to where the miner is at work. The pillars or ribs are left until the whole mining territory is gone over generally, when the pillars are gone at by the men and drawn.

Many mines are abandoned without drawing the pillars. There are various ways of joining the coal on this plan of work.

Where the vein is thick the miner shoots the coal out on the solid; that means no cutting or mining. When the signal is given to shoot, which is at noon and at 5 o'clock P. M., the very earth trembles with the heavy discharges. The mine is filled with dense volumes of smoke. The miners retire from the mines or to a point in the mines near the downcast, until the smoke can be driven out. Where the coal is from three to four feet, men mine, cut and use a small amount of powder in shooting coal. Smaller veins worked on this plan are mined and wedged down. Shooting coal on the solid makes vast quantities of slack, which in many parts of the State is a total loss; mining, cutting and then shooting makes less. Mining and wedging down makes none unless the coal is very tender.

Every miner is expected to prop his own room to keep it from caving in on him, the company or individual furnishing the props and delivering them at his room. An average miner will set in a day three props. Some roofs require more than others. The prop is sunk in the

floor a few inches, and a cap about two inches thick is driven between top of prop and roof. A careful estimate made at Keith & Perry mine, at Rich Hill, shows fifty props to make a cord; at the Rich Hill company's mines, 70 props. 84,000 props were used by this company in the last year. Props cost delivered at the Bates county mines, \$3.50 to \$4.00 per cord.

TIME OF WORKING.

Work is at times sufficient for double shifts, or night work. The night work is usually devoted to repairs, brushing roof, driving entries, cross-timbering, removing waste, etc., preparatory to day work.

Miners work in pairs, sharing their pay, and where the roof is dangerous, as is the case where there are faults, one of the miners watches while the other works. They assist each other in setting props, and in case of accident to one the other is ready to assist.

VENTILATION.

The method of ventilating coal mines is not confined to any one system. Fans and furnaces, air shafts, etc., are used. Where few men work, an air shaft is properly located. A mine worked on the "long wall" plan requires less ventilation than the pillar and room plan. When powder is used, strong ventilation is necessary. Where the air in a mine has to travel a long way, and is being inhaled by men and mules, breathing the impurities generated in the old workings of the mine, a furnace has to be built at the foot of the upcast, and a large fire kept up. *Exhaust* fans are far the best for ventilation. They can be used for a downcast in winter and an upcast in summer. All the best miners of the State now use this fan. A number are in use in the mines capable of lifting 30,000 cubic feet of air per minute. The downcast and upcast, i. e., intake and output, together with the chambers underground, doors, curtains and breaks-through on ribs, are so constructed that the air is forced to all the working places, carrying out the noxious gases.

GASES IN MINES.

No mine is entirely free from gas. Black damp, choke damp, black gas, if sought for, can be found in all our mines. Powder smoke, mixed with the dust arising from the mule ways, is now thought by many to be the most dangerous explosive found in coal mines. Black damp is easily detected. Your light will die out when brought

in contact with it. You will find it heavier than air and laying low. Your life will not go out with your light. You will have plenty of time to get out of the mine. White damp—white gas—is a treacherous and very dangerous gas, generating in the abandoned workings of a mine. Your light burns free in it, with nothing to warn you of its presence until you feel a stupor come over you, and you go to sleep in death. This is the sensation as related by men rescued from it. It seldom gets out of the old workings of the mine. Fire gas or fire damp is only found in deep mines. Four mines in this State have fire gas—two in Caldwell county and two in Bates. Mines giving out much fire damp have to be watched closely. The diggers in such mines work with a safety lamp. Thorough ventilation renders them all harmless. This gas is explosive, and capable of doing much harm in the mines.

COMPARATIVE VALUE OF COAL VEINS.

The value of a vein of coal is not estimated by its thickness entirely. Often large veins of coal are of less value than smaller ones. We know of one vein of coal three feet thick, and one just half that thickness, both being worked, the thinner vein proving the more profitable.

The quality of the coal, the nature of the roof and floor, and the plan or method of work that may be adopted, have to be considered. We also have to calculate the expense of roadways, props, cross-timbers, etc. Some roofs are sufficient to allow roadways twelve feet wide, which stand a great while without timber. The mine being wet or dry, the hardness of the coal, whether firmly attached to roof or bottom, or both, number and extent of faults.

A miner gets extra pay for driving room through "fault," varying from \$1 per foot to \$1 per yard.

Mines sometimes have to be abandoned on account of faults. We apply the term fault to rolls, slips, horsebacks, washouts, rock cuts, etc., whether the vein can be worked by shaft, slope or drift.

WASTE OF THE COAL.

Missouri is capable of supporting a dense population. In years to come they will need all the coal now underlaying the State. Much valuable coal is being wasted by careless and unskilled mining engineers. Numbers of miners waste in mining and the abandonment of pillars at least one-half of the vein.

MINES BY COUNTIES

AUDRAIN COUNTY.

AUDRAIN COUNTY COAL AND FIRE CLAY MINES.

Vandalia Coal Co.; W. R. Williams, secretary—Postoffice, Vandalia, Mo.; location, 1-4 mile west of Vandalia on C. & A. R'y; operated by shaft 60 feet deep; coal vein thickness, 28 inches; worked on long wall plan by steam; ventilated by furnace; number of employes, 47; price paid per ton, \$1; value of coal per ton at mine, \$1.50; output, 60 tons per day.

AUDRAIN MANUFACTURING AND COAL MINING CO.

S. D. Ely, president; postoffice, Vandalia, Mo.; operated by shaft 60 feet deep; vein of coal, 30 inches; fire clay, 15 feet; mined on long wall plan by steam.

At Farber, on C. & A. R'y, one shaft 100 feet deep is being mined; vein of coal reported 30 inches thick; hoist by horse power; not working when we visited that locality. We hear of other mines in this county which we have not seen.

South of Ladonia three to four miles, are several mines being worked.

Northwest of Rush Hill, six to ten miles, more coal is mined (so reported) than at Vandalia. South of Farber on Hickory Creek, there are several shafts and drift mines.

We learn from Mr. Joseph Able that in sinking a well on his farm in Sec. 8, Twp. 52, range 7, W., he found a vein of coal four feet thick, at a depth of 46 feet.

GRUNDY COUNTY.**GRUNDY COUNTY COAL CO.**

Postoffice, Trenton, Mo.; operated by shaft 210 feet deep; steam; thickness of coal vein, 18 inches; worked on long wall plan; ventilation, fan; employes, from 60 to 100 men; price per ton for mining, \$1.18 3-4; output 2,000 tons per month; value of coal at mines, \$2.25 per ton at retail, \$2.06 at wholesale; located at Trenton, Grundy county, Mo.

GRAND RIVER COAL CO.

J. B. Wilson, superintendent, Spickardville, Mo.; location, Spickardville; operated by shaft 100 feet deep; steam power; thickness of vein, 8 to 24 inches; worked on long wall plan.

CARROLL COUNTY.

In this county ten mines are reported, of which nine are worked by drift and one by shaft. Total output, about 8,000 tons. Work from 18 to 28 men.

MACON COUNTY.**LITTLE PITTSBURG COAL AND MINING CO.**

Location, Lingo, on H. & St. Joe R'y; Thomas Jobson, superintendent; postoffice, Lingo; worked by shaft 140 feet deep; steam power; vein 3 1-2 feet thick; long wall plan; number employes, 88; pay for mining, 70 to 80 cents per ton; output, 24,000 tons; price of coal at mines, \$1.35 per ton.

LOOMIS & SNIVELY MINES.

Operate three mines at Bevier, on H. & St. Joe R'y; A. F. Bunker, superintendent. Shaft No. 1, 55 feet deep; employ 115 men. Shaft No. 3, 60 feet deep; employ 75 men. Shaft No. 4, 60 feet deep; employ 80 men. Vein, 4 1-3 feet thick; output, 260,000 tons (estimated).

EXCELLO COAL AND MINING CO.

Near Excello, Mo., on Wabash R'y; operated by drift; coal 3 1-2 feet thick; mined on pillar and room plan; ventilated by furnace; 76 employees; paid for mining, 81 1-4 cents per ton; value of coal at mine, \$1.50 per ton; output, 25,000 tons.

OAKDALE COAL AND MINING CO.

At Bevier, Mo.; operated by shaft 60 feet deep; steam power; vein, 4 feet thick; ventilated by furnace; 114 employees; pay 70 cents per ton for mining; value of coal per ton, \$1.50; 25,593 tons output.

WATSON COAL AND MINING CO.

At Bevier, Mo.; S. W. Watson, owner and operator; worked by shaft 74 feet deep; vein, 4 to 5 feet thick; ventilated by fan; employs in winter, 114 men; pay 62 1-2 to 80 cents per ton for mining; value of coal at mine, \$1.37 1-2; output, 35,544 tons. We append the following letter:

BEVIER, Mo., Oct. 5, 1887.

M. L. WOLFE, ESQ., *Butler, Mo.:*

DEAR SIR: In reply to your request: The Bevier coal deposit covers about 25 miles in length and about 6 miles wide. We are working the third vein, which will average 4 1-2 feet in thickness. This is in Macon county. The same deposit extends through Randolph county from north to south; this I have seen. There appears also to be another deposit west of the Chariton river, about six miles wide, and in this deposit Lingo Mine is working. I do not know the extent of this north and south, but it lays several miles north of the H. & St. Joe railroad. This deposit is from three to four feet thick. * * * I am

Yours, etc.,

W. S. WATSON.

THOS. WARDELL MINE NO. 3.

John Wardell, general superintendent; operated by shaft 120 feet deep; location, Bevier; steam power; coal vein 4 feet; pillar and room plan; ventilation, fan; employes, 175; paid for mining, 62 1-2 to .80 cents per ton; value per ton at mines, \$1.42 1-2; output, 45,785 tons.

J. W. ATWELL MINE.

Bevier; shaft; employs from 80 to 100 men; pay 62 1-2 to 80 cents per ton; output, 52,000 tons (estimated).

RANDOLPH COUNTY.**HUNTSVILLE COAL AND MINING COMPANY.**

A. J. McHugh, manager; postoffice, Huntsville, Mo.; location, 2 1-2 miles west of Moberly, on Wabash Railway; operated by shaft 90 feet deep; steam power; coal vein thickness, 3 ft. 10 in.; worked on pillar and room plan; ventilated by fan; No. employes, 97; paid for mining, 94c. per ton; output, 34,540 tons; value per ton at mine, \$1.50.

A. J. WILLIAMS' SHAFT.

Postoffice, Moberly; depth of shaft, 110 feet; horse power; location, 2 miles N. W. of Moberly; vein, 4 feet thick; worked by pillar and room plan; No. of employes, 1 man to 10 men.

BYLAND & SHARON MINE.

Postoffice, Moberly; located two miles N. W. of Moberly; operated by shaft 110 feet deep; horse hoister; thickness of vein, 4 feet; pillar and room plan; employes, 6.

H. WARD SHAFT.

Postoffice, Moberly; depth, 88 feet; horse hoister; two miles N. W. of Moberly; ventilation, air shaft; pillar and room; vein, 4 feet

thick; employes, 8; output, 2,184 tons; pay for mining, 94 cents per ton; price of coal at mine, \$1.25.

OSAGE COAL MINING CO.

J. C. Fleming, Sup't; postoffice, Elliott, Mo.; location, Elliott, on M., K. & T. R'y; operated by shaft 150 feet deep; steam power; vein, 4 feet thick; pillar and room work; ventilated by fan; employes, 130; pay for mining per ton, 94c.; price per ton at mine, \$1.34; expense for props past year, \$1,800; 45,000 props used in mine past year; output, 54,726 tons.

HIGBY COAL & MINING CO.

S. Leslie, Sec'y; John S. Elliott, Pres't; postoffice, Higby, Mo.; location, Higby, at crossing of M., K. & T. and C. & A. R'ys; operated by shaft 175 feet deep; steam power; vein, 4 feet thick; room and pillar; ventilated by fan; employes, 71 men; pay for mining, 94c. per ton; output, 24,500 tons.

RENICK COAL & MINING CO.

L. E. Hubbard, Sup't; Postoffice, Renick, Mo.; operated by shaft; location, 1-4 mile east of Renick, on Wabash R'y; depth, 80 feet; horse hoister; vein, 3 ft. 8 in. thick; pillar and room plan; furnace for ventilation; 46 employes; pay for mining, 94c. per ton; output, 17,500 tons; price of coal at mine, \$1.50 per ton.

Renick C. and M. Co., west mine, 1-2 mile west of Renick, on Wabash R'y; operated by shaft, 110 feet deep; steam power; vein, 3 ft. 8 in.; pillar and room; ventilation, fan; employes, 59; price per ton mining, 94c.; output, 20,000 tons; price at mine, \$1.50 per ton.

MUTUAL COAL MINING CO.

G. W. Keebaugh, Sup't; postoffice, Huntsville, Mo.; location, 1 1-2 miles east of Huntsville, on Wabash R'y; operated by shaft 90 feet deep; steam power; thickness vein, 4 feet; No. employes, 50; output, 15,000 tons, approximate; no complete statistics.

WOODWARD COAL AND MINING CO.

J. W. Paterson, Sup't; postoffice, Huntsville, Mo.; location, near Huntsville, on Wabash R'y. This is a co-operative mine, operated by shaft, 80 feet deep; steam power; vein, 4 feet thick; pillar and room

plan; ventilated by fan; No. employes, 59 men; pay per ton mining, 94c.; output, 20,000 tons; value per ton at mine, \$1.43.

EUREKA MINE.

Location, Huntsville; W. T. Rutherford, manager; operated by slope; vein, 4 feet; pillar and room plan; ventilation, furnace; employes, 15; pay per ton for mining, 80c.; output, 6,900 tons; price at mine, \$1.37 1-2 per ton.

GEO. W. JONES' MINE.

Location, Huntsville; operated by drift; vein, 4 feet thick; work 2 men.

A. J. RAMESBURG'S MINE.

Location, Huntsville, Mo.; vein, 4 feet thick; worked by drift; employes, 3.

There are many small mines in this county which we could not visit, operated by shafts and drifts, from which we have no returns. The other mines in this county we visited, some of them twice.

RAY COUNTY.

HAYSON & CO.

Postoffice, Swanwick; location, Swanwick, St, Joe & Richmond, R'y.; operated by shaft, 95 feet deep; horse power; vein, 20 inches; pillar and room; ventilation, furnace; employes, 28; pay in winter 4 1 2c. per bu., in summer 4c.; value at mine, \$1.50 per ton; output, 6,000 tons.

HUGHES & CO.

Postoffice, Richmond; operating 3 shaft mines, 75, 90 and 12 feet deep; horse power; vein, 2 feet thick; long wall; furnace ventilation; employes, average 150 men; pay for mining, \$1 per ton; output, 40,000 tons; price at mine, \$1.50 to \$1.62 1-12 per ton.

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SCULLIN COAL MINING CO.

Postoffice, Richmond; L. N. Guild, general agent; operate 2 shaft mines; one near Camden, on Wabash R'y; one on St. Joe & Richmond R'y, near Richmond; each 60 feet deep; steam power; the vein at Camden 2 feet, at Lexington about same; both work on long wall plan; ventilation, furnaces; employes, 170 men; pay for mining, \$1 per ton; price of coal at mines, \$1.65; output, 51,060 tons.

GREGORY & KING.

Operate shaft mine near Camden, on Wabash R'y; 27 feet deep; horse power; vein, 18 inches thick; long wall plan; ventilated by furnace; employes, in winter, 40 men; pay for mining, \$1; price at mine, \$1.56; output, 40,000 tons.

WM. WILSON MINE.

Located at Richmond; operated by shaft 96 feet deep; horse power; long wall plan; ventilation, furnace; employes, 45 men; pay per ton mining, \$1; price at mine, \$1.50 to \$1.62 1-2; output, 10,000 tons.

HUBBLE & SHOTWELL MINE NO. 7.

Located at Richmond; operated by shaft 110 feet deep; horse power; ventilation, furnace; work on long wall plan; idle when we visited that localiy; no returns.

MINE NO. 1.

W. D. Rankin & Co., operators; postoffice, Henry, Mo., on St. Joe & Richmond R'y, 1 1-2 miles north of Lexington Junction; drift; long wall plan; vein, 2 feet thick; steam power; employes, 4 men cleaning up mine, preparing for winter run.

There are many small mines in this county which I did not have time to visit.

CALDWELL COUNTY.

Hamilton Coal Company, operators; J. W. Harper, superintendent—postoffice, Hamilton; manner of mining, by shaft, steam hoisting; depth of shaft, 300 feet; ventilation, by fan; location, two miles southwest of Hamilton; means of exit, by ladders in ventilating shaft; method of work, on long wall plan; some fire damp; use safety lamps; track at face of coal; miners enter and leave mine in cage; thickness of vein, twenty-eight inches; roof, hard slate; number of miners, forty; other employes, ten; price paid per ton, 87 1-2 cents; three mules underground; output yearly, about 26,000 tons; a sufficient quantity of petroleum is found in this mine to pay for saving; it is gathered from the floor of the mine and put in barrels and tubs; transportation, by switch to Hannibal & St. Joe railway.

CALDWELL COAL COMPANY.

Postoffice—Hamilton, Mo.; superintendent, John Flanagan; location, two miles east of Hamilton on Hannibal & St. Joe railway; manner of mining, by shaft; depth of shaft, 360 feet; number of miners at work June 28th last, fifteen; hoist in cages by steam; thickness of vein, twenty-six inches; method of work, on long wall plan; no powder used; track at face of coal; some fire damp; ventilation, steam jet at bottom of shaft,

Since making above record, we have received the following:

"We have abandoned the vein of coal which we have been working during the past year, owing to its faulty nature, and are preparing to put our shaft down 115 deeper to another vein. We put a test hole down from bottom of shaft and found three feet of coal."

(Signed)

JOHN FLANIGAN.

This will make the shaft 475 feet deep, and it is not probable that the vein will be much broken by faults at that depth.

LINN COUNTY.

BERNARD SCHÄFER MINE.

Brookfield, Mo.; operated by shaft 152 feet deep; horse hoister;

vein, two feet thick; pillar and room plan; employes, one to eight men; pay per bushel for mining, five to eight cents; output, 900 tons.

J. W. MORRIS MINE.

Brookfield, Mo.; operated by shaft 138 feet; horse power; vein, twenty-seven inches; pillar and room; one to six men; price for mining, \$1.50 per ton; output, 250 ton; value at mine, \$2 per ton.

DAVID THOMAS.

Meadville, Mo.; operated by slope; pillar and room; output, 400 tons; number of men, one to six.

We have not visited any mines in this county, as they were all idle when there. There are other mines in this county not reported.

PUTNAM COUNTY.

MENDOTA COAL AND MINING CO.

W. Ketcham, president; postoffice, Meudota, Mo.; manner of mining, by drifts; three mines; thickness of vein, thirty-four inches; manner of mining, pillar and room; ventilation, by furnaces; number of miners, 600; other employes at mine, sixty; pay per ton, eighty cents in summer, \$1 in winter; output for year, 100,000 tons; value of coal per ton at mine, \$1.40.

For full report of the working of above mine, we append letter from President Ketcham, with other matter. At this mine they have a superior arrangement for taking coal to surface. An endless wire cable is moved by steam engine, moving train of ten to twenty-five loaded cars from face of mine to tipple. The "hitcher-on" in the mine signals the engineer at surface by vibration of wire connecting inside of mine with engineer's quarters:

MENDOTA, Mo., Oct. 7, 1887.

MARSHALL L. WOLFE, ESQ., *Mine Inspector, State of Mo., Butler, Mo.*:

DEAR SIR: Complying with your favor of 5th inst., we will say: We use eight mining machines which both undermine and cut cor-

ners (the Harrison mining machine); one man handles the machine and is assisted by a shoveler, who removes the cuttings, helps move the machine, etc. We find that these machines when handled properly will with ease cut from twenty to twenty-five feet of entry work in about nine hours—that is, cut corners and undermine same—and a good runner will cut two forty-foot rooms, four feet on the rib and have his machine in the third room ready for the next morning start, in the same time as above.

The coal produced by the machines is loaded out by "loaders," who sledge down the coal. The machines are run with compressed air which is furnished by a Norwalk Compressor. The air is first forced into a large receiver which is placed on the outside of the mine and from there through four inch pipes to a smaller receiver placed about 800 feet in the mine, and from there through three, two and one and one-fourth inch pipe to near where the machine works, when the air is carried to the machine through a one inch hose.

Our roof is of the best, and pronounced so by all miners who have worked there. Overlying the coal is a strata of slate which runs from four to twenty-four inches in thickness, which stands good. On taking down the slate we have a good solid rock roof, which stands without timbering, and is several feet in thickness.

The long wall system can be worked to a good advantage in this seam, and at times we work the coal that way, but we find when long wall is opened in this seam, that it must be worked every day so as to keep the squeeze off from the face, and the uncertainty of the coal trade is such that perhaps the long wall would have to stand in the summer season a limited length of time, and before it could be worked again, the expense to put same in workable shape would throw your expense of mining far ahead or the pillar and room system, which we work at all times, unless entry is nearing crop and can be worked out in the season, then we throw it into long wall and push it to completion.

We cannot state just how much workable coal there is in Putnam county, but on an approximate stating we could say there is not more than 20,000 to 25,000 acres, and a great portion of this is not accessible.

Our company now owns 18,000 acres of coal land in a body on which our mines are now located, which we believe to be the best coal workable land in the county, as the coal can be had by drifting in at any point off the creek.

We now think we have given you all the information asked for, and if you desire any further information beyond this and the filling of

the blanks you enclosed us, which we return herewith, we will be pleased to furnish same.

Yours truly,

THE MENDOTA COAL & MINING CO.

LAFAYETTE COUNTY.

WINDSOR COAL CO.

H. W. Windsor, superintendent; postoffice, Higginsville; operated by shaft forty feet deep; located two miles west of Higginsville on C. & A. railway; steam; on long wall plan; vein, eighteen inches; ventilation, furnace; 115 employes; price for mining, eighty-seven and one-half cents per ton in summer, \$1.06 1-4 in winter; output, 25,000 tons; price per ton at mine, \$1.75.

CORDER COAL AND COKE CO.

H. G. Smith, manager; postoffice, Corder, Mo.; location, Corder, on C. & A. railway; operated by shaft 100 feet deep; steam power; coal vein, eighteen to twenty inches; work on long wall plan; ventilation, by fan; employes, 115 men; output, 35,000 tons; price paid per ton for mining, ninety-four cents to \$1.05; price of coal at mine, \$1.25 to \$1.75.

STRASBURG MINE.

Strasburg & Sons, operators; postoffice, Mayview, Mo.; location, one mile east of Mayview on the C. & A. railway; operated by shaft ninety-seven feet deep; horse hoister; vein of coal, eighteen inches; long wall plan; ventilation, furnace; employes, thirty; pay, three and one-half to four and three-fourths cents per bushel for mining; output, 2,350 tons; price of coal at mines, \$1.70 per ton.

FOWLER COAL MINE.

T. J. Fowler, proprietor; postoffice, Higginsville, Mo.; location, one and one-fourth miles southwest of Higginsville; worked by drift; ventilation by furnace; employes, 6; coal 18 inches thick; long wall plan.

BEATTY COAL MINE.

Operated by Mr. Noble; postoffice, Higginsville; worked by shaft; depth, 45 feet; vein, 16 inches thick; emloyees, 8; located southwest of Higginsville, 2 miles; long wall plan.

FARMERS' COAL MINE.

Operated by Monroe Wooliver; postoffice, Higginsville, Mo.; vein, 16 inches thick; worked on long wall plan; drift; employes, 10.

J. H. GILKIE.

Operating mine one and one-fourth miles southwest of Higginsville; postoffice, Higginsville; worked by shaft; horse hoister; employees, 10.

JAMES SEAWELL.

Location, one and one-half miles west of Wellington, on Mo. P. R'y; postoffice, Wellington; operated by shaft; 40 feet deep; horse power; ventilated by furnace; employes, 20; on long wall plan; J. T. Seawell, superintendent; vein, 18 inches; paid for mining, \$1 to \$1.25 per ton; output, 9,000 tons; value at mine, \$1.37 1-2 per ton.

HARTMAN & GILBEET MINE.

Location, 2 miles west of Wellington on the Mo. Pac. R'y; post-office, Wellington, Mo.; operated by shaft; 23 feet deep; horse power.

LEXINGTON COAL MINING CO.

Mr. M. W. Serat, superintendent; postoffice, Lexington, Mo. This company is operating six mines, located on Lexington & Independence R'y, from about one mile below Lexington to a point near Wellington.

These mines are operated by drift with furnaces for ventilation; thickness of vein, 17 to 22 inches; all worked on the long wall plan; pay for mining, summer, \$1 per ton where men push their own cars; 87 1-2 cents where mules haul them; In winter, \$1.12 1-2 where men push their own car and \$1 where mules haul it; value of coal at mine, \$1.45; output, 119,568 tons; total employes, 337.

ANDREW CARTER MINE.

Postoffice, Wellington, Mo.; operated by drift; location, 1 1-2 miles east of Wellington, on Railway; ventilation, furnace; employes, 10; vein, 18 inches.

THOMAS CLARK MINE.

Postoffice, Lexington, Mo.; operated by drift; employes, 3 to 10 men; ventilated by furnace; location, Lexington

HENRY MACEY MINE.

Location, 2 miles west of Lexington, on Lexington & Independence R'y; Henry Macey, owner and proprietor; postoffice, 1619 Baltimore Avenue, Kansas City; Joseph Perry, superintendent; worked by drift; thickness of vein, 18 to 22 inches; worked on long wall plan; ventilated by furnaces; employes, 45; pay for mining, \$1 in summer, \$1.12 1-2 in winter; price of coal at mine, \$1.30 in summer, \$1.50 in winter; output, 14,000 tons.

KIST MINE.

Lewis Kist, owner and proprietor; postoffice, Lexington; location, Lexington; operated by drift; connected to other mine for ventilation; long wall plan; employes, 3 to 10 men.

THOMAS WALTON.

Postoffice, Lexington; location, Lexington; operated by drift; vein, 18 inches; long wall; air furnace; employes, 14; pay for mining, \$1 in summer, and \$1.12 1-2 in winter; output, 3,400 tons; price at mine, \$1.65 per ton.

NAPOLEON MINE.

Location, 1 mile east of Napoleon, on R'y; Williams & Defenbaugh, operators; postoffice, Napoleon; operated by shaft; horse power.

ANDREW O'MALLEY.

Andrew O'Malley, owner and operator; location, 1-2 mile south of Lexington; postoffice, Lexington; operated by shaft; horse power; employes, 5 to 10; long wall plan.

EXCELSIOR MINE.

J. H. Campbell, superintendent; postoffice, Higginsville, Mo.; location, 1-2 mile west of Higginsville, on C. & A. R'y; operated by shaft 65 feet deep; steam, power; vein, 17 inches thick; long wall plan; ventilation, furnace; number of employes, 20; output, 6,000 tons, approximated. No statistics.

BELL & GREER.

Postoffice, Lexington; location, 1-2 mile south of Lexington; worked by drift, on long wall plan; employes, 3 to 15 men.

J. C. M'GREW MINES.

Location, between Lexington and Wellington; one operated by shaft; steam power; one operated by drifts; long wall; vein, 18 to 24 inches, ventilated by furnaces; employes, winter, 100 men; pay for mining, \$1.12 1-2 per ton; price at mine, \$2.00; output, 10,970 tons.

The coal mines near Dover, owned by Mr. Steel, idle when we visited that locality. Want of time prevented our visiting the small mines of this county.

HENRY COUNTY.**BLAIR DIAMOND MINES.**

Location, near Brownington, Mo.; Superintendent, R. D. Blair; two mines operated by shaft; No. 1. by horse power; No. 2, by steam power; No. 1, 40 feet deep; No. 2, 73 feet deep; vein, 3 feet thick; pillar and room plan; fan and furnace ventilation; aggregate employes, 86; pay for mining, summer, 90 cents; winter, \$1 per ton; output, 41,050 tons; value per ton at mine, \$1.62.

TEBO COAL CO.

R. Bowen, sup't.; postoffice, Lewis Station, Mo.; operated by shaft 40 feet deep; horse power; vein, 4 1-2 feet thick; pillar and room

plan; ventilation by furnace; employes, 103; daily output, 125 tons; pay for mining, 70 cents per ton; value at mine, \$1.50 per ton.

CO-OPOERATIVE COAL MINING CO.

L. W. Goode, president; near Lewis Station; operating two mines by shafts; one by steam, and the other by horse power; vein, 4 feet thick; pillar and room; employes, 25 men; price for mining, 70 cents per ton; output, 800 tons.

C. W. JORDAN MINE.

Location, midway between Clinton and Deepwater; operating by shaft 52 feet deep; steam power; pillar and room work; vein, 40 inches thick; employes, 35 men; \$1 to \$1.10 per ton for mining; output, 5,000 tons; value at mine, \$1.50 per ton.

C. C. MORSE & CO.

Location, near Calhoun; operated by shaft 50 feet deep; steam power; vein, 30 inches thick; long wall plan; employes, 19; pay for mining per ton, \$1.10; output daily, 15 tons; value at mine, \$1.45 per ton.

CHAS. W. BOYDSTON.

Location, 3 miles southeast of Deep Water; worked by slope; vein, 40 inches thick; pillar and room; employes, 20.

KEITH & PERRY COAL CO.

Location, at Deep Water, on Gulf R'y; operated by shaft 60 feet deep; steam power; vein, 27 inches thick; long wall plan; ventilated by fan; employes, 117; price per ton for mining, 80c. in summer, 90c. in winter; output, 48,602 tons; price per ton at mines, \$1.50.

DEEP WATER CLAY MINING CO.

Postoffice, Deep Water, Mo.; mine coal and fire clay; manufacture tiling; employ 70 men.

MORRIS & SHELTON MINE.

Located near Brownington, Mo.; worked by slope, employ 9 men.

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H. T. NOBLE MINE.

Location south of Clinton 5 miles; operated by shaft 60 feet deep; steam engine used for pumping; pillar and room plan; coal, 42 inches thick; horse power, hoisting; 5 men employed.

B. L. OWEN MINE.

Location 1 1-2 miles southeast of Clinton; worked by shaft 30 feet deep; horse power; coal, 24 inches thick; pillar and room plan.

BLEVINS' MINE.

Location on Gulf R'y, one mile south of Harper; operated by shaft 40 feet deep; horse power; vein, 30 inches thick; No. of men, 7.

G. W. PITCHER MINE.

Location three miles south of Clinton; operated by shaft 18 feet deep; horse power; coal, 2 feet thick.

Many other small mines and quarries in this county we did not visit.

VERNON COUNTY.**R. E. ALLEN'S MINE.**

Location, near Carbon Center; postoffice, Rich Hill; worked by drift; power, steam, transmitted by wire cable; pillar and room plan; ventilation by furnace; No. employes, 15 to 20; thickness of vein, 4 1-2 to 7 1-2 feet; output, 8,200 tons; price paid for mining, run of mine, \$1 1-2c. per ton.

J. E. BRYANT.

Postoffice, Carbon Center; location, near Carbon; worked by drift; thickness of vein from 5 to 8 1-2 feet; pillar and room plan; No.

of men, 7 ; output, 4,800 tons ; price of mining, 51 1 2c. per ton mine run ; price at mine on cars, \$1 per ton.

MOUNDVILLE MINES.

P. W. Jones and M. Six, operators ; both operated by shafts ; horse power ; depth, 20 feet ; vein, 30 inches thick ; worked on pillar and room plan ; employes, 1 to 10 men each ; pay for mining 4c. per bushel ; aggregate output, 60,000 bushels.

W. G. GONTERMAN MINE.

Postoffice, Bethany, Mo.; shaft 25 feet deep; horse power; vein, 2 1-2 feet; pillar and room; ventilation, furnace; 1 to 7 employes; output, 1,200 tons.

JASPER NEWTON & WM. CRAGILL MINES.

Each operate a mine in vicinity of Warwick by slope; vein, 30 inches; pillar and room plan; each work from 1 to 7 men; aggregate output, 50,000 bushels.

There are many other mines in this county being worked by small force that we could not visit. That territory has numerous outcrops of coal not developed.

BATES COUNTY.

KEITH & PERRY COAL CO.

Postoffice, Rich Hill, Mo.; R. H. Keith, President; John Perry, Vice-President and General Manager; George R. Sweeney, Mining Superintendent; operating 2 mines; No. 5 and No. 6 by shafts. No. 5 is 70 feet deep and No. 6, 247 feet in depth; location, 2 1-2 miles west of Rich Hill; operated by steam power and worked on pillar and room plan; ventilated by fans; average thickness of vein, 5 feet; aggregate of employes, 360; price paid for mining, 50c. per ton for run of mines; output, 200,000 tons; amount of powder used for year, 11,000 kegs.

RICH HILL COAL MINING CO.

Thos. Flemming, Sup't; Postoffice, Rich Hill, Mo.; operated by 3 shafts, 4 slopes and several quarries; ventilation, exhaust fans at shafts and furnaces at slopes; steam power; thickness of vein, average, 5 feet; pillar and room plan; employes, 620; output, 511,305 65-100 tons; price paid per ton for run of mines, 51 1-2c.; value of coal at mine, \$1 to \$1.25 per ton; powder used for year, 17,843 kegs; Joseph T. Reavely, mine manager; location, near Rich Hill.

HENDRICKS & MAIN.

Postoffice, Virginia, Mo.; location, on Miami creek, near Virginia; operated by shaft; horse power; 19 feet deep; room and pillar; vein, 3 feet thick; employes, 6; output, 1,600 tons; average value per ton at mine, \$1.50.

POWERS, BRUCE & CO.

Powers Bro's and Pearson are operating mines and quarries in the vicinity of Shobe; postoffice, Shobe, Mo.; aggregate output, 28,000 tons; employes, 35; vein, 3 to 6 feet.

O. Spencer and others, near Rich Hill, are operating mines and quarries, the aggregate output of which is 20,000 tons; employes, 20; vein, 4 1/2 feet.

Col. Pace and others are operating mines in the vicinity of Foster; postoffice, Foster, Mo.; operated by drift and quarry; aggregate output, 27,840 tons; employes, 50; thickness of vein, 40 inches.

A number of mines and quarries are being operated in the neighborhood of Mulberry; also, in Hudson township, from which I have no report.

These mines are operated on a small scale for local consumption and we did not have time to visit them.

BARTON COUNTY.**MINDEN MINE.**

Location, at Minden, on Gulf R'y; Chas. H. Morgan, owner and operator; operated by shaft 41 feet deep; horse power; vein, 40 inches thick; pillar and room plan; ventilated by furnace; No. employes, 70 to 90; pay for mining, 57c. per ton in summer, 70c. per ton in winter; value of coal at mine, \$1.40 per ton for lump; run of the mines, \$1.10; output, 30,000 tons.

WESTON COAL & MINING CO.

Location, at Minden, on Missouri Pacific R'y; Thomas Flemming, Sup't; operated by shaft 70 feet deep; steam power; pillar and room plan; ventilated by fan; employes, 165 men; price of coal at mine, \$1.65 per ton; output, 65,103 tons.

Many small mines in this county not visited for want of time.

JOHNSON COUNTY.**CARBON HILL COAL CO.**

Location, near Monserrat, Mo., on Mo. P. railway; operating mine by slope; vein, 3 to 7 feet thick; worked by pillar and room; employes, 12. Just opening mine, driving entries.

JOHN HENRY MINE.

Location, one mile east of Warrensburg; worked by drift; 1 to 6 men; output, 1,000 tons.

PERRY & TAYLOR MINE.

Location, one mile east of Warrensburg; worked by slope; vein, 24 inches thick; 3 men; output, 800 tons.

D. A. BULLOCK MINE.

Location, 7 miles southeast of Warrensburg; worked by slope; vein, 30 inches thick; 8 men; price of coal at mine, \$1.25 per ton; output, 700 tons.

MOSES THOMPSON MINE.

Location, on Clear Fork; worked by drift; vein, 30 inches thick
15 men; output, 50,000 bushels.

JOHN H. HARDIN & BROS.

Location, on Clear Fork; vein; 18 inches thick; worked by drift;
4 men; output, 160 tons.

Mines in this vicinity afford coal of superior quality.

WELCH BROS.' MINE.

Location, northeast of Warrensburg, one mile; operating mine by
drift. Mines and quarries of coal are being opened and worked in
every township in this county. Roofs generally good.

COOPER COUNTY.**MISSOURI VALLEY COAL AND MINING CO.**

Post office, Boonville, Mo.; location, on Missouri River, 3 1-2 miles
above Boonville; worked by shaft; employes, 20; output, 5,000 tons;
pay per bushel for mining, 3 1-2 cents; depth, 50 feet; putting in an
expensive plant, and preparing to mine according to law; have pene-
trated 35 feet in coal and not yet through deposit; quality of coal,
"cannel."

There are several true veins and many pockets of coal being
worked in this county, which we did not visit for want of time.

Lead is being mined in northwest part of county.

VENTILATION OF COAL MINES.

BY THOMAS FOWLER.

Read before the meeting of the Mining Institute of Western Pennsylvania,
September 17, 1887.

The history of coal mining generally, and particularly that portion of it which deals with our own State, bears ample testimony of the improvements that have been made of late years, yet much remains to be done in this connection with regard to the ventilation of our coal mines. The passing of the Bituminous Coal Mine Regulation Act of 1874 has induced men connected with the industry to use every known means whereby the workman's safety might be guarded, yet we cannot close our eyes to the fact, however faultless the officials in charge may have been when accidents occur, it has a tendency to bring either the discipline or their own abilities in question.

Among the many things to which, of late, so much earnest study has been devoted, not least are the natural laws affecting the ventilation of our coal mines. And I maintain that it is the bounden duty of all who are engaged in colliery work to enter thoughtfully into those matters immediately connected with their daily toil, and leave no stone unturned that will in any way tend to lessen those calamities of which we read about once in a while. We owe a debt of almost eternal gratitude to those men, who to benefit and aid the mining population, have devoted themselves to earnest and incessant study, and who, after having solved problems and unraveled apparent mysteries, have given us the benefit of their study and research. And my opinion is that there can be no better way of showing our appreciation of their labors than by carrying out in practice the lessons they so ably teach. When we look back upon coal mining of the past, and compare it with the coal mining of the present, it is quite obvious to us that our fore-fathers had not the same difficulties to encounter, at least not to the same extent, and consequently had no need to prepare for such great things as we have nowadays.

The output is larger. Coal is to be conveyed greater distances, consequently the number of hands employed is proportionately larger.

Coals are drawn from greater depths, and therefore encounter more gaseous seams, and, having to supply so many more men, boys and animals with an adequate amount of pure air, we have to provide for something infinitely greater than our forefathers some twenty-five years ago. It is to speak of means, etc., of supplying this indispensable (namely, fresh air), in a sufficient quantity that I am with you here to-day. In coal mining we have to contend with various kinds of gases, all of which are more or less deleterious to human life, and therefore, even if we had time, I should consider it superfluous to enumerate them and give their characteristics. I think it will be sufficient for our purpose to notice one particular gas with which we are all best acquainted, namely, carbureted hydrogen, and I dare say there are but few in this company who have not had the opportunity of seeing the effects of this gas at some time or other in their mining history. Seeing then the dangerous and insidious character and properties of the gases with which we have to contend, it is of the utmost importance that we have a current of fresh air sufficiently large to dilute and render them harmless. And we are told that for this gas we require not less than sixteen feet of air to one of gas before this end will be accomplished; whereas, if we had only nine cubic feet of air, it is at the most explosive point. In looking over the natural laws affecting ventilation, we have something really entrancing as a study, independent of the benefits we derive from it in any other way, and it is by applying the means suggested while studying these natural laws that has brought to the front the many efficient means now made use of to the end that the well being and safety of those engaged in colliery operations might be secured. We will therefore glance at a few of these natural laws as we go along.

We notice the pressure or weight of the air on the earth's surface. I suppose most of you are aware of the use of a barometer, and, although not in use in any of our mines along this valley to my knowledge, and should it be compulsory to have one at mines (by law), I am afraid a great many superintendents, mine bosses and fire bosses would be quite at sea to the value or use, for I presume a great many would laugh at the idea of having a weather glass around a coal mine. And although some of you members may differ with me, I say that the rise and fall of the barometer is a good indication, and used judiciously, will render valuable aid to superintendents, mine bosses and fire bosses around a colliery in the discharge of their various duties. Yet some men allow, because the fire damp of mines is more sensitive than the mercury in the tube of a barometer, that it is no earthly use around a mine. However, gentlemen, my experience is otherwise. For instance, suppose that to-day the mercurial column is thirty inches (which, speaking approximately, means fifteen pounds to the square inch), when the thermometer stands at thirty-two degrees Fah. of pressure on the earth's surface, or one pound for every two inches of mercury; and suppose that to-morrow, instead of having thirty-two inches we have only twenty-eight, or two inches less, then we have one pound less pressure on every square inch of surface, and if the fifteen pounds' pressure on the inch was only just sufficient to keep the gas in the strata, and there are some miles of strata open, then the reducing of the pressure would be like lifting the weight of the safety valve on a boiler, giving egress to the steam, which would continue to blow off until the pressure inside was brought down equal to the pressure of the atmos-

sphere, and so with the gas. We next notice the elasticity and compressibility of air. Air is an elastic body, and also compressible. We may press it to almost any extent by the application of sufficient force, but when so compressed it will, on account of its elasticity, spring out again (on removing the force), and will exert exactly the same force that it took to press it in. Suppose, for instance, this room to be a vacuum, and a box containing a cubic foot of air be opened, it would escape until the whole room was filled with air, but of course it would be so much rarer and lighter bulk for bulk. Air also possesses, like all other bodies, the property of inertia; that is, it has no inclination to move when at rest, and when in motion has no inclination to stop unless acted upon in both cases by some force which in the latter case must be equal and opposite. Having thus briefly glanced at a few of the properties of atmospheric air, we next proceed to notice how these properties are utilized to ventilate a mine. Ventilation proper is divided into two kinds, namely, natural or artificial or mechanical. As I have already stated, in consequence of deep shafts and gaseous seams, natural ventilation is pretty nearly abolished, being found totally inadequate for the times in which we live. Under the system of natural ventilation the deepest shaft would be the upcast in the winter, while during the hot days in the summer, the short shaft became the upcast through the sun's rays heating the air in it more than was the case in the long shaft. You will perceive that this method was but a very poor one, and could be of very little use, as the direction of the air current might be changed many times in one day, even, and must stop entirely when changing. To overcome these difficulties our forefathers had resource to many various plans, which to us look very simple, indeed, yet, at the same time, they show us that even in those days they had some little knowledge of those properties of the air of which I have just spoken. For instance, they took advantage of the inertia of the air by pouring a stream of water down one shaft, but as the water had to be raised again it was rather a costly method.

They also took advantage of the rarefying of the air by having a fire grate hung in one of the shafts, which was the forerunner of our gigantic furnaces of to-day, and later on, which I have seen myself, a stack or chimney was built over the intended upcast, and doors put in the side of it, and a sort of furnace projecting half way across the shaft, which of course was used for no other purpose, and by these means the furnace man could do his work in daylight. As the years rolled on, the inadequacy of such arrangements began to show itself and to place those in charge of mines under the necessity of bringing out some more efficient means of producing a ventilating current, and this led to the method of putting a furnace at the bottom of one of the shafts, and thus rarefying not only a part but the whole of the air in that shaft intended for the upcast. It is an interesting study, as well as being necessary information, to understand the principles upon which furnace ventilation is based, and in passing along we shall not deem the time lost or wasted if we devote a few minutes to its consideration. It is found by practical experiment, and laid down as a rule, that each foot of air or gas expands for each degree in the increase of temperature 1-459 of its original volume, so that if we have 459 feet of air at thirty-two degrees, and we raise the temperature thirty-three degrees, it then becomes 460 feet, and it is by taking advantage of the expansion and refraction of the air that we get a ventilation current from a furnace.

You will perceive that if we have two shafts of equal depth and filled with air at equal temperature there will be equilibrium, and consequently there will be no motion of the air either one way or the other. But suppose that instead of allowing the temperature to remain equal, we change it in one of the shafts, say from fifty to one hundred and fifty degrees Fahrenheit. We have an air current in the direction of the heated shaft. The air in the downcast being so much heavier than in the upcast, it would be like taking 123 feet of the air out of the upcast shaft, and the taking away of this would give rise to the ventilating current, and with a barometric pressure of fourteen minutes, seven seconds on the square inch : or when the barometer shows thirty inches, mercurial column would be in downcast nearly eight and one-half pounds on the square foot over and above the pressure in the upcast, and would give a velocity equal to eight times the square root of the motive column, providing there was no friction, and as the square root of 123 is about 11, we should have but for friction, a velocity of eighty-eight feet per second; but as we have to notice the law of friction further on we pass it by just now. Furnace ventilation is, however, fast becoming a thing of the past, and many firms are substituting them by fans. Now a fan takes advantage of the inertia of the air by putting it in motion as it revolves, for we find that the air, like any other body when put in motion by anything revolving upon a center, the tendency is for the particles to fly off from the center toward the circumference, and as soon as it finds a place of egress, away it goes into the outer air. Both furnaces and fans have their advantages and disadvantages, and I think if some of your members would take up this subject, I have no doubt but that you could give us a very interesting paper. Having briefly glanced at the means made use of to produce a current of air in the mine, our next duty is to spend a few moments in considering its distributions into the different parts of the workings, etc.

As you will perceive no system of ventilation (however perfect and complete the arrangements for producing the current may be) can be of any avail, unless a judicious system of distributing the ventilation current be adopted. Now in considering this part of our subject, we notice that the old system of having one continuous current of air starting from the downcast and returning to the upcast is fast becoming a thing of the past.

This system in mining dialect is known as the sweeping system. The method, however, that is now pretty generally adopted, it that of dividing the mine into two districts, and so regulating the air current in each district that each may get a share proportioned to its particular requirements. Now it will appear obvious to those who study the matter at all that the latter system is far the most preferable and for many reasons :

1. The velocity of the air current is not so great, which is an important factor in mine ventilation, as I shall show you further on when we come to deal with the question of friction.

2. When a mine of any magnitude is ventilated by one current of air from beginning to end, and that current has been collecting, and carries with it in its route all the various gases that are given off by the mine (in the first instance), the men and lamps, etc., it must reach some of them in a very impure state, and men having to breath and work in an atmosphere so impregnated, cannot perform their work with

anything like the same ease and comfort as their more fortunate comrades who may have the advantage of the air before it became vitiated as I have no doubt there are plenty in this room as well as myself, who have experienced the great and almost indefinite difference between an intake and return airway for comfort, etc., while working.

3. Suppose an explosion should occur in a mine ventilated by one current right through, then most likely the force of the explosion would affect the whole of the men working in the mine, a lesson which the painful experiences both at home and abroad of past years have taught us; whereas, if one should occur in a mine ventilated by separated currents, it is most likely, nay almost certain that the only men affected would be the men working in that immediate district, and who were supplied by that current in which district the explosion happened; thus you see the magnitude of the explosion itself would be diminished, and not only so, but the damage to life and property proportionably minimized.

There are, however, some precautions to be taken in dividing or splitting the air current, in order that it may be done effectually: First, in dividing the mine into districts care must be taken that as far as practicable the districts should be so arranged, both as to area and dip, that they may be pretty evenly balanced without the need of too many regulators, as it will be seen that the dip very materially affects the ventilation. Second, in splitting the air we should make all these splits commence as near the downcast, and terminate as near the upcast, as possible, in order that the various volumes may not have too far to travel in one volume before they separate in the main intake, nor after they have joined again in the main return, as this would cause great velocity in the main airways, and consequently great friction.

This leads us now to notice the law of friction. I stated that, were it not for friction, we should have a velocity of nearly eighty-eight feet per second; but we find in practice that instead of having a velocity due to eight and one half pounds per square foot, we should not be able, in a good case, to get a velocity greater than is due to about one pound per foot, the remaining seven and one-half pounds being spent on friction—by friction we mean the rubbing of the air against the top, bottom and sides of the workings, etc. Seeing then the immense power required to overcome the friction in proportion to the power required to give motion to the air, it is of the greatest importance that an airway should be constructed so as to give a large area with as little rubbing surface as possible, in order that such friction may be reduced to the lowest possible minimum. Now it is obvious that the nearer an airway can approach a circle the better, as a circle offers less resistance than any other figure, the area remaining the same.

We find, however, that a circular airway is difficult to get in practice. There is nothing then left for us but to ascertain the next best form, and this is as near square as we can possibly get; for instance, suppose we have an airway ten feet high and ten feet wide, we have then one hundred feet area and forty feet rubbing surface; but suppose that instead of this we have one the same area but rectangular in form, say twenty feet wide and five feet high, then for the one hundred feet area in this case we have fifty feet rubbing surface. And then again many have the impression that if they can get the two airways (the united areas of which shall be equal to the area of the large one),

they will answer equally as well; but by a glance at the example just given, the fallacy of this idea will be manifest; for instance, suppose we have an airway ten feet by six feet, which equals sixty feet area, we have a rubbing surface of thirty-two feet. Now if instead of this we had two distinct ones, each ten feet by three feet, the rubbing surface would be fifty-two feet. So you see, for the two airways, although the area is the same, when both are added together we have twenty feet more of rubbing surface for each foot lineal in the airway. This would, of course, make an almost infinite difference in the power required to give an equal ventilating current. Then again another advantage is to be gained by large airways over small and cramped ones. I dare say many of you at times have heard men, who are not very well acquainted with these matters, talk as though an increase in the power giving rise to a ventilating current would answer just as well as expending so much money on the airways, but this law of friction defies this sort of thing to accomplish the desired effect. It would be worth while increasing the power by making the furnace hotter or by making the fan revolve quicker if the air could be forced around the workings, etc., in the same proportion; but this is not so, as it only quickens the current as the cubic root of the increase power. For instance, suppose if you have air circulating in an airway at a given velocity, and you wish to double the velocity, you could not do so by supplying twice the power, as will appear evident from the following: If you double the speed you practically double the extent of rubbing surface, as you pass twice the quantity in a given time, or in other words, you double the length of the column that has to be propelled in a given time, and that, we see, will double the resistance to be overcome in the time; but that is not all. There is still further increase of the resistance. This double moving surface, that is the column of moving air, has to pass over the sides, roof and floor of the airway with a double velocity, and this double velocity will double the friction of double the quantity; that is to say, that a double velocity meets with a four-fold resistance, and the power necessary for increasing the ventilation (the airways remaining the same) increases as the cube of velocity. It will therefore be clearly seen that the most effectual means of increasing the amount of air circulation is to have good large airways, and as straight as the peculiarities of the mine will allow, in order that friction and the power necessary to overcome it may be minimized."

LEAD, ZINC AND IRON MINES.

LEAD AND ZINC MINES OF MISSOURI.

HISTORICAL.

The first discovery of lead ore in the State of Missouri was made by Crozat in 1717, in Washington county. The first permanent settlement in that county was made by miners in 1721 and 1722. Immense deposits of galena were found at the surface and no regular mining was necessary to obtain all the lead ore which could be disposed of.

The first regular mining shaft was sunk by Moses Austin and sons in 1798. Mr. Austin was a native of Virginia. The mines in that county are still being worked. The lead ore in that locality is associated with sulphate of barytes. That mineral had no commercial value in that mine until after the building of the Iron Mountain Railway. It is not very valuable, but such vast quantities of it had been mined with the lead ore and thrown away, that it was only necessary to gather it and transport it to market. The waste piles of this mineral are about exhausted, and it will require mining in the future to supply the demand. Zinc iron and copper are found in this county, but not in very heavy deposits.

The first discovery of lead ore in Southwest Missouri was made by Thomas Shepherd and Simpson Oldham in section 26, township 26, range 32, in Newton County, in 1847. The first lead furnace in that part of the State was an air furnace, built by Levi Gilstrap and brother in 1850, and the first blast furnace was built by G. W. & W. S. Mosely and John Ryan in 1851.

This furnace was first operated with two large bellows moved by horse power. It was afterward moved to Cedar Creek for water power.

The second discovery of lead ore was by William Foster, an English miner, in section 12, township 25, range 31, in same county.

The galena at that point is associated with zinc ore. In 1851 an outcrop of carbonate of lead was found on section 6, township 25, range 30, by Madison Vickery, who did not develop his discovery. In 1854 he showed Foster his carbonate, and Foster, from that cropping, opened the celebrated Granby lead and zinc mines, in Newton county. The immense deposit of galena at Granby caused the building of several small furnaces in 1855 and 1856.

In 1857 the Granby Mining and Smelting Company commenced building the largest lead smelting furnace in the United States. It was completed in 1858, and soon absorbed all the smaller concerns. The total amount of lead smelted at Granby before the close of 1862 was 50,000,000 pounds.

The heaviest deposit of calamine (silicate of zinc) ever found in the United States was found at Granby. It was considered worthless by the miners and thrown away until 1870, as was done with barytes in Southeast Missouri. We shall refer to this locality in our tabulated report.

The first lead ore found in Jasper County was an outcrop of carbonate of lead, which led to the finding of sulphide (galena) very near the surface, in 1851, at Oronogo. The celebrated Joplin mine was partially developed in 1871, and for eight years was the world's wonder as a mine. It is by no means exhausted, being surrounded by the richest mining districts in the State, and will be fully described in tabulated report.

It would require too much space to write a history of each mine in Missouri, as to date of discovery, by whom, etc.

In our detailed report, each district will be fully described, as to its production, method of working, location, and all facts necessary to complete statistics.

While it is not our province to write the geology of Missouri, were we competent to do so, we think some quotations from competent authors will prove interesting.

MINERALS OF MISSOURI ASSOCIATED WITH LEAD ORE.

At Mine Lamotte, Madison County, cobalt and nickel ores in paying quantities.

At Granby, in Newton County, immense deposits of calamine. Sphalerite, cerussite, calcite, pyromorphite, and greenockite are found there in small deposits.

In Joplin and adjacent mines, both blende and silicate of zinc, the blende largely in excess of silicate, exactly the reverse of Granby mine.

The district, in addition to galena, blonde, and calamine, yields carbonate of lead, calcite, pysite, and dolomite; also greenockite.

Old Circle Mines, in Cole County, yield baryte, chalcopysite, malachite, azurite, calcite, calamine, and sphalerite.

At Pilot Knob and Shepherd Mountain, Iron County, are found hematite, magnetite, limonite, manganese oxide, and bog manganese.

Jefferson County is remarkable for its great variety of minerals. Galena, cerussite, anglesite, calamine, smithsonite, sphalerite, hydrozincite, chalcopyrite, malachite, azurite, pyrite, baryte, witherite, limonite.

Morgan County: Galena, blonde, baryte.

Pulaski County: Nitre in caves.

St. Francois County, Iron Mountain, hematite, limonite; also, granite and porphyry.

We mention only a few counties in this connection for want of space. The other localities will be in detailed report.

"The mines of Southeast Missouri, in Franklin, Jefferson, Washington, St. Francois, Ste. Genevieve, and Madison counties, are in the third magnesian limestone, lower silurian. Those of Southwest Missouri, in Newton, Jasper, Lawrence, Greene, and Dade counties, are in the Keokuk limestone. In the central part of the State, Moniteau, Cole, Miller, Morgan, and adjoining counties are mostly in the lower silurian magnesian limestone, but partly in the sub-carboniferous."

There are but few counties in Missouri, south of the center of the State, that do not have lead ore; but it does not follow that there is always a paying deposit where "float" is found.

No true veins of lead or zinc ore have been found in Southwest Missouri. In Granby and adjacent mines those ores are found in horizontal openings (clay occupying the space between "cap rock" and "bed"). The lead ore found in those mines occurs in boulder and sheet form, and is almost entirely free from any foreign matter. Calamine is found in the same "opening" as the lead. It is usually under the lead ore, and frequently serves as a "bed" for it. At some of the shafts lead and zinc are not associated. In Jasper County the ore-bearing formation differs materially in character and color from the Granby. The ores at Granby are in red and yellow clay (ferruginous), while in Jasper County, especially in the western portion, the ores are in blue and black formation. It may be that the Jasper County mines, being nearer the coal measures, is the cause of difference in color of gangue.

Much of the ore at Carterville and Webb City is so much mixed with very hard flint that crushing is necessary to separate it. The same

is true of nearly all the mines of Jasper county except Lehigh, which yields nearly all free zinc ore, which brings the highest price of any zinc ore found in the State, and from which a special brand of spelter is made.

Previous to the introduction of high explosives the mining of calamine was very expensive. It is a very porous ore, and the strength of ordinary black powder was dissipated without breaking much of it. Water, also, very materially interfered with its use. For dry, solid rock, black powder is best. Miners differ as to the relative value of the different brands of dynamite. Each brand has its advocates. The value of those explosives depends entirely on the amount of nitro-glycerine they contain, that being the base of all the explosives used in our mines. We will explain method of drainage, hoisting, cleaning ores, etc., in tabulated report.

No evidence of volcanic action is visible in this State west of Texas county. Some igneous rocks are found there. St. Genevieve, St. Francois, Madison, Iron, Washington and Shannon counties have igneous matter and primitive rocks near the surface.

It was formerly believed by many that all deposits of lead, zinc and other ores were the result of volcanic eruption. They who have given thought to this subject have entirely abandoned that theory. It has been conclusively demonstrated that all the ores now being mined in southwest Missouri have been deposited where now found by water, holding them in solution and suspension.

In proof of this, stalactites and stalagmites of carbonate of lead have been taken from a cave in Granby mine, and the same formations in calamine have been mined in that vicinity. The trend of ore-bearing gangue is about seventeen degrees west of north and east of south. As to the extent of the ore deposits north, it is probable that they are cut off by the coal measures. Lead and zinc ores have been associated with "pocket coal," but it is not probable that those minerals will be found under true veins of coal.

Missouri has all kinds of building stone, including granite, all the clays used in the manufacture of earthenwares, from kaolin to ordinary brick clay. Beautiful marble abounds; sand suitable for the manufacture of the best glass in inexhaustible quantity. Missouri has a greater variety of useful minerals, in larger bodies, than any State in the Union.

COUNTIES IN WHICH THE ORES OF IRON, LEAD, ZINC, AND COPPER
HAVE BEEN FOUND.

Barry, Benton, Bollinger, Butler, Camden, Carroll, Carter, Chris-

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tian, Cooper, Crawford, Dade, Dallas, Dent, Franklin, Greene, Hickory, Iron, Jasper, Jefferson, Johnson, Laclede, Lawrence, Madison, Moniteau, Morgan, Newton, Oregon, Osage, Pettis, Phelps, Reynolds, Ripley, St. Francois, St. Genevieve, Shannon, Stone, Taney, Texas, Vernon, Washington, Wayne, Webster and Wright.

The most productive lead mines in the State are in St. Francois county.

As to the output of iron, that is governed by the demand, there being comparatively inexhaustible deposits in many counties. St. Francois and Iron counties (at Iron Mountain and Pilot Knob), have enough iron visible to supply the United States at least a century.

Madison county produces more nickel and cobalt than all the other mines in the State.

Granite, in immense deposits, in St. Francois, St. Genevieve, Madison, Wayne and Butler counties.

More work is being done in the granite mines of Wayne than at any other point.

From a granite quarry between Gadshill and Piedmont, about ten car loads per day are sent north and the same quantity south. This granite is blue. At other points the granite is gray or red.

Granite is shipped from Sienite, Graniteville, Middlebrook and other points on Belmont branch of the Iron Mountain railway.

The most productive zinc mines in the State are in Jasper county. Jasper is the second county in lead product. The principal quantity of zinc ore found in Jasper county is blende (sulphide of zinc).

Newton county has the largest production of calamine (silicate of zinc), and is third in the production of lead.

DEVELOPED MINES OF LEAD IN SOUTHEAST MISSOURI—ST. FRANCOIS COUNTY—ST. JOE LEAD MINE.

Postoffice, Bonne Terre; reduction works and principal shaft in section 14, township 37, range 4 east, St. Francois county; capital, \$1,500,000; output, 80,000 pounds of lead daily (except Sunday); number of miners, 300; other employes in the mines, 400; ground foreman, Captain Porter; general manager, Mr. C. B. Parsons; character of ore, sulphide of lead, disseminated in third magnesian limestone; present depth of working levels, 200 feet; thickness of ore-bearing formation, reaches a depth of 400 feet, tested by core drill; the matte from this mine contains twelve to fourteen per cent. of nickel and a little cobalt; work at this mine is continuous, being divided into three eight hour "shifts;" wages, \$1.25 to \$1.50 per shift; mechanics, \$1.75 to \$2.25 per day.

The company controls the entire working of the mine. Nine large boilers, eight steam pumps and ten crushers and sets of rolls are in use. Hoisting is done from three shafts.

Mining at that locality is done strictly according to the mining law of the State.

The company is exceedingly liberal. They have provided a free library and reading room for their employes, and with this advantage, many boys raised in that locality have become competent and worthy business men. No one is obliged as an employe to buy at the "company store." The men are paid semi-monthly in cash.

The company own about 27,000 acres of land. They have built a narrow gauge railway thirteen miles long from their mine to Summit station on the Iron Mountain railway.

On this railway they use five locomotives and 110 cars. The number of employes on this road makes an addition to the company pay-roll, so that it contains a thousand names.

All the employes of the company are contented and strikes are unknown.

THE DOE RUN LEAD COMPANY.

Postoffices, Bonne Terre, Delassus and Doe Run, St. Francois county; J. Wyman Jones, president, New York; Hugh N. Camp, treasurer, New York; Gustavus Setz, vice-president and metallurgist, Bonne Terre, Mo.; Chas. B. Parsons, sup't, Bonne Terre, Mo.; F. P. Graves, secretary and assistant superintendent.

Location of plant, northwest one-fourth of section 16, township 35, range 5, east; size of dressing works, 100x72 feet; three 18 flue steel boilers; 12 double jigs; 2 Blake crushers; 1 incline and 1 vertical shaft; character of ore, same as St. Joe; number of employes, 145, will soon employ 200; capacity, 300 "pigs" of lead, average weight, 80 pounds each, per day.

Management, exceedingly liberal. Miners well satisfied.

This mine is new and has been recently purchased by members of the St. Joe Company. Paying material sixty feet thick has been tested. On the west, the ore bearing limestone comes in contact with the granitic formation which cuts it off in that direction. It is very probable that the ore-bearing stratum thickens toward the east.

In southeast Missouri, as in southwest, the trend is about 17 degrees west of north and east of south. We have not seen any variation from this in any mine in the State.

Six miles west of north from Doe Run, Mr. W. R. Taylor has discovered with diamond drill a very rich deposit of disseminated lead ore, similar to St. Joe and Doe run.

MINE LAMOTTE

Location in Madison and St. Francois counties, in townships 33, 34, 35, ranges 6 and 7; an old Spanish grant covering 16,000 acres in Madison and 8,000 acres in St. Francois; owned by Rowland Hazard, Providence, Rhode Island, J. D. Sanders, superintendent; depth of mine, 130 feet; character of ore, sulphide of lead disseminated in third magnesian lime and associated with nickle and cobalt. The limestone at this mine is more silicious than that at St. Joe and Doe run. Output, average for three years past, 7,600,660 pounds of lead and 75 to 80 tons of nickle and cobalt, 3-5 nickle, 2-5 cobalt; output for this year, 8,960,000 pounds of lead; number of miners, 200; employes not in mines, 200; wages, \$1.10 to \$1.30; much of the mining is done by contract, by which miners make from \$1.50 to \$2.25 per day; payment, semi-monthly; three shafts are connected underground, affording good air and means of exit; three boilers are being used at the mines; hoisting, by steam; mining law being complied with; wood is used for fuel; three steam pumps in use; many of the miners are raising ore independent of the land owner, paying a royalty on same.

PALMER MINES.

Postoffice, Palmer; location, township 36, 1 west, and township 36, 1 east, with small tracks in other townships, all in Washington county, 10,000 acres; J. H. Ainsworth, president, Toledo, Ohio; A. Harrison, superintendent, Palmer, Mo.; character of ore, galena, associated with sulphate of baryte; float ore is found in soil and in ferruginous clay, pebble and boulder form; lower run of ore, in horizontal sheets in magnesian lime; usual depth to ore, 75 feet; greatest depth, 130 feet; number of miners employed by company, 6; other employes, 8; average time of working mines each year, 7 months; wages, \$1 per day; many miners work independent of company, paying royalty on ore; 1 Dean pump and 2 steam siphons, with one boiler in the mine; output, 1,000,000 pounds yearly; three air furnaces; cost of transportation affects the price of ore and wages at Palmer mine; it is located about 15 miles from Potosi, and freight to that point costs 17 cents per hundred pounds. The town of Palmer is in section 14, township 36, range 1, west; furnace is in section 14, township 36, range 1, west.

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UNION MINING AND SMELTING COMPANY.

James Long, superintendent; postoffice, Old Mines, Washington county, Mo.

The land owned by this company is known as the Old Mines concession, covering 6,700 acres in townships 38 and 39, ranges 2 and 3, east; character of ore, lead sulphide, with some lead carbonate, associated with baryte. The lead and baryte are found from the surface to a depth of 103 feet. The upper or float ore is found in clay, the lower, in clay pockets in magnesian limestone. Only three miners are in the direct employ of the company. The company employs outside the mine, 8 to 10 men. The other miners mine the lead and baryte and sell to the company, paying a royalty. The company has 1 Scotch furnace, "2 eyes;" 1 steam pump and boiler; about 50 men are mining on company land; output last year, 950,000 pounds of lead; average output of baryte, 75 tons per month; fuel used, wood and charcoal; wages, \$1 per day.

FOURCHE A RENAULT MINE.

Location, section 17, township 38, range 2 east; owner and manager, Wm. Long; postoffice, Potosi, Washington county, Mo.; one air furnace; capacity, 3,000 pounds of ore per day; used about one-fourth time; employed at furnace, three men; twenty men mining and paying royalty; depth of ore, from 3 to 40 feet, in small pockets.

MINE OF MESSRS. J. P. & R. M. BUGG.

Location, Potosi, Washington county, Mo.

Mr. Bugg being absent, the output of lead from his mine not obtained.

Mr. L. D. Bone, clerk of the company, gave the output of baryte for the year ending September 31, 1887, 2,421,489 pounds—105 car-loads. 75 men working on this land.

Lead has been discovered and worked for many years in almost every township in Washington county. Time would not allow a visit to all the mines. About 500 men are mining in that county for lead and baryte, paying a royalty direct to land owners. No deep mining has been done in that locality and many vertical crevices, filled with lead ore and baryte, are to be found in that county and have not been prospected. Such crevices usually lead to deeper deposits of paying ore.

IRON MOUNTAIN CO.

C. A. Pilley, Sup't; postoffice, Iron Mountain, St. Francois county; treasurer, Henry Schlie; location, section 31, township 35, range 4 east; manner of mining, four open mines, two shafts, two inclines; greatest depth, 206 feet; No. of boilers, 11; No. of hoisters, 4; hoist from shafts in cages; No. of employes, 575; output limited to demand; for year ending March 31, 1887, 102,331 tons; wages, miners, \$1.35 per day; ordinary labor, \$1.15; mechanics, \$1.50 to \$2.75; time, 10 hours per day.

Much of the ore is cleaned by hydraulic process. Water is brought from Indian creek. After being elevated to a reservoir 316 feet it is carried to the ore piles in pipes and discharged through hose with great force.

ST. LOUIS ORE AND STEEL CO.

Postoffice, Pilot Knob; location, section 29, township 34, range 4 east, in Iron county, Mo.; manner of mining, two tunnels, one shaft; depth of shaft 160 feet; specular iron ore; hoist by double cage at shaft; eight boilers at base of hill for compressing air and for electric lighting of works and mine; two boilers at mine; distance from mine to plant, 1-2 mile; employes, 600; wages, day labor, \$1.40. Much of the work is done by contract, contractors making \$2 per day. Output past year, 200,000 tons, limited only by the demand.

The ore from Pilot Knob is shipped to Pittsburg, Pa., for the manufacture of Bessemer steel. It is said to be the best ore found in this State for that purpose.

A powder manufactory has been built near Pilot Knob and is making a good article of dynamite. This will enable the mine operators to obtain fresh powder and save in price of transportation. For breaking iron ore 60 per cent. dynamite is used. In lead and zinc mines the average dynamite is about 40 per cent.

VALLE'S MINE.

This productive mine is in St. Francois county. It produces lead and zinc. Time to visit the mine we did not have, which we regret, as it is worthy of extended notice. There are several other valuable mines in that locality we were sorry to pass without visiting.

CRAWFORD COUNTY.

The iron ore of Crawford county is generally found on or near the surface, and usually mined by stripping the small amount of earth and rock which covers it. The principal companies mining ore in this county are the Meramec Mining Co. and the Midland Furnace Co. The ore is mostly soft, easily handled and well adapted for the manufacture of Bessemer steel. There are employed in this county about 1,000 men at the mines and furnaces. The output is estimated to be near 100,000 tons per annum.

SOUTHWEST MISSOURI, NEWTON COUNTY—GRANBY MINE.

Covers section 6, township 25, north, range 30, west. Owners: Granby Mining and Smelting Company, by lease from the St. Louis & San Francisco Railway Company. Superintendent, Mr. John Kingston; book-keeper and treasurer, Mr. W. H. T. Green. This company owns a large territory of mining lands adjoining sec. 6 (Granby) and in other parts of the county.

The company does not employ many miners, but allows them to mine on their lands and pay a royalty on ores.

They furnish to the miners boilers and pumps, fuel, also. The miner pays for the fuel if he is successful.

The company has twenty-two boilers, twenty-three "lift" pumps, and two steam pumps; four steam hoisters and eight steam jigs. They have very large smelting works.

Granby Mine is remarkable for its immense deposits of lead and zinc ores. The lead ore is principally galena, though large quantities of carbonate of lead have been mined. The largest deposit of calamine discovered in America was found in Granby. It seems almost inexhaustible, as it is being found in adjacent territory. The company ships this ore to their zinc furnace at Pittsburg, Kansas. Sulphide of zinc is found in this mine in considerable quantity.

We visited the following shafts on section 6 and adjacent lands:

	No. of men.
Woodcock & Co., lead, 55 feet deep	4
Hardshaft. This shaft has produced 8,000,000 pounds lead ore.....	.....
Young & Co., lead.....	2
Wood & Hood, lead and zinc, 60 feet deep.....	2
Ritter & Ping, lead, 60 feet deep.....	2
Paul & Co., zinc, 60 feet deep.....	2
Little Boss, lead and zinc, 85 feet deep, lift pump.....	9
Sanders & Co., lead and zinc, 75 feet deep, lift pump.....	6
Burnout, Rambo & Co., lead, 55 feet deep, lift pump.....	9
Chester, Davis & Co., zinc, 68 feet deep, lift pump.....	5
Frank Posey & Co., zinc, 60 feet deep, dry.....	3
Lucas & Co., lead and zinc, 55 feet deep, dry.....	3
Vickery & Co., lead and zinc, 50 feet deep, dry.....	3
Trevaskis & Co., lead, 70 feet deep, steam pump.....	6
Sitter & Co., not producing, not deep enough, steam pump.....	3
Kelly & Co., not producing, lift pump.....	3
G. Lucas & Co., lead, 82 feet deep, lift pump.....	4
Cook & Co., zinc, 115 feet deep, lift pump.....	9
Thos. Walker & Co., lead and zinc, 100 feet deep, lift pump.....	5
Beavers & Co., zinc, 80 feet deep, lift pump.....	4
Bishop & Co., zinc, 75 feet deep, lift pump.....	5
Morton & Co., zinc, 50 feet deep, steam pump.....	3
Carlyon & Co., repairing shaft.....	4
A. Thomas & Co., lead and zinc, 100 feet deep, lift pump.....	5
Woodruff & Co., zinc, 80 feet deep, lift pump.....	5
Last Chance, zinc, 100 feet deep, lift pump.....	3
Future Great, draining shaft, 225 feet deep	2
Holiness shaft, Trent & Co., 75 feet deep, lead and zinc, lift pump	9
A. J. Johnson & Co., lead and zinc, 80 feet deep, lift pump.....	5
Frost & Co., lead and zinc, 100 feet deep, lift pump.....	5
Cook and Grigsby, zinc, 86 feet deep, dry	4
R. Cook & Co., zinc, 70 feet deep, dry.....	3

	No. of men.
Adkins, Sheppard & Co., lead and zinc, 60 feet deep, lift pump.....	4
Dugan & Co., 35 feet deep, carbonate of lead.....	3
McCurdy & Co., 60 feet deep, galena.....	2
Runnels Bros., 50 feet deep, galena and zinc.....	2
Total number of men	148
Total number of shafts	36

Ten hand jigs for cleaning ore are in use, employing thirty men and five teams.

The company have in their furnace and on their yards, fifty men.

Wages in mine, \$1.25 to \$1.50.

The miners of Granby are perfectly satisfied with the management of the company. They were formerly much opposed to the company, but after trying other points and companies, they nearly all returned to Granby. They occupy and cultivate the lands of the company, in gardens, free of rent. The royalty charged by the company is considered rather excessive, but as they furnish machinery to the miners, as a rule the miners willingly pay the royalty.

Mining in Granby is in a primitive way. Owing to the formations associated with the ore, it would not be possible to mine successfully by any fixed rule:

Granby and mines in that vicinity are pocket deposits, and it is not practicable to run levels owing to the shape of the bed-rock, and the raising and dipping of the ores.

The hoising is done by windlass, where the shaft is not deep. Where no stream is necessary to drain the mine, cattle are used for hoisting with "whip." Where the shafts are very deep, steam hoisters are used.

OUTPUT OF GRANBY AND ADJACENT MINES, NOT OBTAINED TO DATE:

From Mr. John Wilson's valuable and correct pamphlet, we learn that the output for year ending March 1, 1887, was: lead ore, 3,120,000 pounds; zinc ore, 17,784,000 pounds; total value at mine, \$103,992.

A paying mine ^{last} of Granby Mine, on section 9, township 25, range 30, abandoned ^{five} years since on account of disagreement of partners.

From a small number of shafts in n. w. 1-4 of 9-25-30, 2,500,000 pounds of lead were mined in two years, and one car load of calamine.

Sections 5 and 18 in township 25, range 30, are partially developed and may prove rich in lead and zinc. Portions of section 11 and 12, in township 25, range 31, have good surface indications of ore.

Some miners had fair prospect of lead on section 9, but had to abandon shaft for want of air, when we visited that locality.

OSWEGO MINING CO.

Postoffice, Thurman, Newton county, Mo., Thurman Mine; location, sections 30, 31, 29, 20, in township 27 north, range 32 west; 720 acres; character of ore, galena and calamine; number of employes, twenty; average wages, \$1.50 to \$1.75 per day; output not reported.

CORN MINE—NEWTON COUNTY.

Postoffice, Racine, Mo.; owners and operators, Geo. Case, P. L. Swartz, R. I. Henderson, — Barnes and Lee Taylor; in sections 1, 2 and 36, in township 26 north, range 33 west; 560 acres; lead and zinc. This mine was formerly productive, but nearly abandoned by former owners. The company now owning it are practical and energetic men, and will push work and make a success.

TANYARD HOLLOW MINE—NEWTON COUNTY..

Location, 3 1-2 miles southwest of Joplin; postoffice, Joplin, Mo.; owners, Byers & Murphy; character of ore, galena and blonde; depth of shafts, 70 to 90 feet; worked by sub-lease. Output for year ending February, 1887, lead ore, 18,960; zinc ore, 282,285 pounds.

MURDOCK & SMITH MINE—NEWTON COUNTY.

Location, section 24, township 27, range 34, five miles southwest of Joplin; postoffice, Joplin, Mo. An old mine, abandoned for five years; re-opened May, 1886. Output in nine months after resuming work, 120,000 pounds lead ore and 1,040,000 zinc ore.

MOSELEY MINE—NEWTON COUNTY.

Wm. B. Shaffer & Co.; postoffice, Neosho and Joplin; character of ores, galena and calamine; output for year ending March, 1887, 50,000 pounds lead ore, 3,000,000 pounds zinc ore (silicate). This is the oldest mine in Southwest Missouri, as mentioned in prefatory.

ROARING SPRING DISTRICT.

E. B. LEONARD & CO.

Location, section 19, township 27, range 33; depth of present working, 87 feet; character of ore, blonde. Plant: One boiler, one crusher and jigs. Operated by Peter Johnson & Co. under lease. Number of men employed, 6; output, average 2 1-2 tons of zinc ore daily.

JASPER COUNTY.

Bellville District embraces the following territory:

All of section 25, township 28, range 34.

Part of section 23, township 28, range 34.

Part of section 26, township 28, range 34.

Part of section 30, township 28, range 33.

Part of section 31, township 28, range 33.

Part of section 36, township 28, range 34.

Part of section 24, township 28, range 34.

A drill hole in north half of southwest quarter of section 25, township 28, range 34, shows a deeper deposit of ore than has ever been mined in that locality.

The following shafts were visited and inspected in Bellville District. The output will be given in summary:

MURPHY LAND.

Postoffice, Zincite or Joplin, Mo.; operated by McGarron & Co. on royalty; depth of shaft, 60 feet; boiler, engine, lift pump, friction hoister; number of men, 3; ore, blonde.

SOUTH ST. LOUIS CO.

E. G. Neeley, superintendent; depth of shafts, 80 feet; number of men, 15; boiler engine, lift pump, one steam and one horse hoister; mine in good condition; ore, blonde.

KIMMOUTH & MURPHY.

Shaft, 80 feet deep; number of men, average 20; boiler, engine, steam hoister; ore, blonde; mine well managed.

TIGER MINE.

A mine which has been wonderfully productive, but idle when we were there.

HOLDEN LAND.

Owner, Stephen Holden; postoffice, Zincite; Daniel Ryan shaft; mined on royalty; depth of shaft, 95 feet; steam friction hoister; number of men, 13; ore, blonde; air and escape shaft.

MINE NO. 2.

Holden & Co.; C. Degraff, superintendent; depth of shaft, 132 feet; working level, 125 to 128 feet; number of men, 7; air and escape shaft; ore, blonde.

Output, Holden land: Lead ore, 93,106 pounds; zinc, 3,818,590.

DAISY AND FRISCO.

Two productive shafts. Idle on account of want of air.

WRIGHT LAND.

Operators, Standard Company; Charles Fry, superintendent; postoffice, Zincite, Mo.; Tibbins, Bryan and Faulkner mining on royalty; depth, 125 feet; steam friction hoister, lift pump; 13 men; ore, blonde.

"A" SHAFT.

Operated by Standard Co.; C. Fry, superintendent; depth, 130 feet; fifty horse boiler, steam friction hoister; 15 men; ore, blonde. Mine in excellent condition.

NORTH BELLVILLE LEAD AND ZINC CO.

Jacob Foreman, superintendent; postoffice, Zincite, Mo.; Doolan Bros. working on royalty; depth 50 feet; horse hoister; 7 men; ore, blonde.

PARKER & WHITEHEAD.

Depth, 40 feet; horse hoister; 7 men; ore, blonde.

KING, BELL & CO.

Depth, 40 feet; horse hoister; 7 men; ore, blonde.

KEYSTONE.

Two shafts; depth, 70 feet; one steam hoister, one horse hoister; number men, 12; lift pump; ore, blonde. Pump draining shaft; depth, 60 feet; lift pump; number men, 10; ore, blonde.

COLE & BELL.

Depth, 50 feet; horse hoister; number men, 6; ore, blonde.

CRABTREE & CO.

Depth, 60 feet; lift pump; number men, 3; ore, blonde.

BRUCE LAND.

Leased to Barbee & McIntyre; sub-leased to Stephens & Co.; depth of shaft, 70 feet; horse hoister; number of men, 9; ore, blonde.

OWENS & CO.

Sub-leased to Kidder & Co.; shaft, 78 feet; horse hoister; number of men, 7; air and escape; mine in good condition; ore, blonde.

Output of Bruce land, 3,695,021 pounds zinc ore.

CHEW SHAFT.

Hetson, Elswick & Gardner; depth, 90 feet; horse hoister; number men, 6; air and escape shaft; ore, blonde.

BROOKS' LAND.

Operated by Freeman & Block ; McGowan & Co., sublease ; depth, 95 feet ; horse hoister ; number men, 2 ; ore, blonde.

FREEMAN & BLOCK.

John C. Allen, superintendent ; depth of shaft, 100 feet ; steam clutch hoister ; boiler engine, lift pump, Buffalo blower ; number of employes, ten ; character of ore, blonde, calamine and cadmium, the blonde largely predominating ; this is a new strike and a wonderful deposit.

It is the only mine in that vicinity where silicate of zinc and blonde have been found in the same gangue.

More greenockite is associated with the blonde at this mine than at any other point in southwest Missouri, yet discovered, and this is considered by miners a sure indication that the mine will prove extensive.

A piece of blonde from this mine weighing 800 pounds was in the Jasper county exhibit at the St. Louis Exposition. A much larger piece could have been obtained, but could not be hoisted from the shaft.

STEPHENS' MINE—BELLEVILLE DISTRICT.

Nash, Bitte & Co., sub-lease, depth, eighty-three feet ; horse hoister ; number of men, four ; ores, zinc and lead.

WEST SIDE MINING CO.

Moses Block, superintendent ; shaft seventy feet deep ; horse hoister ; three men ; ores, zinc and lead.

WILLMOUTH & HILL.

Depth, 100 feet ; steam friction hoister ; number of men, eight ; ore, blonde.

STEPHENS MINING CO.

Mr. Hood, superintendent ; Hood, McClelland & Co. ; depth, thirty feet ; steam clutch hoister ; number of men, seven ; ore, lead.

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MYERS & MCDOLE.

Foreman, Stone; depth, 100 feet; two boilers; steam friction hoister; number of men, sixteen; steam crusher; two air and escape shafts; one with ladder; ore, blonde.

STEPHENS, NEELY & CO.

Depth, eighty-one feet; horse hoister; air pipe; number of men, three; ore, blonde.

WEST HOLLOW.

Forney & Co.; depth, eighty-five feet; horse hoister; air pipe; number of men, six; ore, blonde.

SHIN & WILSON.

Depth, eighty-five feet; air pipe; horse hoister; number of men, four; cutting for air and escape shaft; ore, blonde; output West Hollow: lead, 55,000 pounds; zinc, 5,593,800 pounds.

LEWELLYN LAND.

Hatfield, Wood & Co.; depth, eighty feet; horse hoister; number of men, seven; cutting for air and escape; ore, blonde.

Pump shaft: depth, eighty-five feet; steam friction hoister; number of men, seven; air and escape shaft; blonde; J. C. Lumsford, Superintendent.

STEPHENS MINE.

Shirley & Co.; depth, ninety-six feet; steam friction hoister; air furnace; cutting to escape shaft; number of men, ten; ore, zinc.

STAR MINING CO.

Superintendent, Blanchard; depth, seventy-eight feet; horse hoister; number of men, nine; ore, blonde; connected by "drift" with shaft No. 2.

Shaft No. 2: Depth ninety-five feet; steam clutch hoister; number of men, eleven; ore, blonde; output: lead, 7,535 pounds; zinc, 1,752,590 pounds.

ORONOGO DISTRICT—LAND OF GRANBY MINING AND SMELTING CO.

Wm. Hamilton, superintendent; postoffice, Oronogo, Mo.; location, sections 31 and 36 in township 29, ranges 32 and 33; output: lead ore, 345,120 pounds; zinc, 470,320 pounds

OLD SLEDGE MINING CO.

Mining on royalty; Mr. M. Bodly, superintendent; depth, sixty-five feet; horse hoister; three men below, four above; ore in two formations: galena, carbonate of lead and calamine in upper stratum (ferruginous clay); blonde and galena in lower run.

Twenty-five men are working at other points on this land. The working is very shallow and nearly all the hoisting done by windlass. The price of blonde at this mine is depreciated on account of the lead ore being so intimately associated with it that it cannot be entirely separated.

NORTH ORONOGO.

Messrs. Hubble & Elliott; location, northeast quarter section 36, township, 29, range 33; postoffice, Oronogo.

When we visited this mine, which is productive, it was idle, the company putting in larger pumps. Output: lead ore, 796,000 pounds; zinc ore, 1,260 000 pounds.

CARTERVILLE DISTRICT—EALOR LAND.

J. Poundstone & Co.; private property; postoffice, Carterville, Mo.; depth of shaft, 120 feet; steam friction hoister; number of men, ten; number of teams, three; three air and escape shafts; shaft enclosed; ores, blonde and galena.

JENKINS, DAVY & CO.

Depth shaft, 115 feet; horse hoister; eleven men; air and escape shaft; galena and blonde.

MOSS & WADKINS.

Depth, 125 feet; horse hoister; number of men, ten; air and escape shaft; lead and zinc.

DAVY & DAUGHERTY.

Shaft 140 feet deep; horse hoister; ten men; air and escape shaft; ores, lead and zinc.

COX & CO.

Shaft 135 feet deep; horse hoister; nine men; no air and escape shaft; ore, principally lead.

SPENCER & CO.

Shaft 125 feet deep; steam friction and clutch hoister; three men; two air and escape shafts; zinc and lead.

LUSCOMBE LAND.

Martin & Co.; shaft 130 feet deep; horse hoister; five men; lead and zinc; cutting for air; ladder in shaft.

HANCOCK & BURNS.

Shaft 137 feet deep; steam friction hoister; No. men, 15; lead and zinc; cutting for air.

ZOGG & SONS.

Land of Daugherty, Davy & Daugherty. Shaft, 140 feet deep; working level, 135 feet; horse hoister; No. men, 13; lead and zinc, principally lead. A new and rich strike.

BALTZELL & BURCH.

Land of Daugherty & Davy. Shaft, 120 feet deep; No. men, 6; "whim" hoister, horse power; lead and zinc; one air and escape shaft.

TRIPLETT & CO.

Shaft, 150 feet deep; horse hoister; No. men, 7; one air and escape shaft; ore, all zinc.

ELSEA & CO.

Shaft, 150 feet deep; repairing works; ore, all zinc.

FOSTER & CO.

Shaft, 148 feet deep; horse hoister; 5 men; ore, all zinc; one air and escape shaft.

MEDLER & CO.

Shaft, 110 feet deep; horse hoister; 8 men; lead and zinc; one air and escape shaft.

BASS & YOUNG.

Shaft, 140 feet deep; horse hoister; 4 men; ore, zinc; air and escape shaft.

HIRLEY & SHIRLEY.

Shaft, 135 feet; horse hoister; No. men, 4; ore, zinc; air and escape shaft.

HEREFORD & KINGSTON.

Depth, 65 feet; horse hoister; 3 men; lead and zinc; air and escape. The only shaft in Carterville District where props are used. Output, lead, 3,031,680 pounds; zinc, 11,233,550 pounds.

NORTH CARTERVILLE.**GROUND & JACKSON.**

Daugherty, Hannum & Davy, land owners. Depth, 68 feet; steam friction hoister; No. men, 11; air and escape shaft; ores, zinc and lead; one steam crusher.

PARKER BRG'S.

Shipley, Sup't; shaft, 140 feet deep; working level, 85 feet; side friction; steam hoister; No. of men, 11; crusher.

BLACK & CO.

Depth of shaft, 61 feet; horse hoister; No. men, 4; lead and zinc.

CHISHOLM & DANIEL.

Shaft, 46 feet deep; No. men, 3; horse hoister; lead and zinc.

ATCHINSON & CO.

Depth of shaft, 60 feet; 3 men; lead and zinc; shaft near broken ground which gives air; horse hoister.

WARNER & CO.

Depth of shaft, 60 feet; horse hoister; No. men, 4; ores, lead and zinc.

NEVADA MINING CO.

L. G. Gray, Sup't; Postoffice, Carterville, Mo.; location, N. W. 1-4 of N. W. 1-4, Sec. 17, T. 28, R. 32; operators, Miracle & Co., on royalty; shaft, 85 feet deep; horse hoister; No. men, 6; ores, lead and zinc.

BROWN & MARTIN.

Shaft, 60 feet deep; horse hoister; No. men, 3; ores, lead and zinc.

BURNS & REYNOLDS.

Shaft, 50 feet deep; No. men, 13; horse hoister; ore, zinc; air and escape shaft.

CRUSAN.

Working alone, going below, cutting and then hoisting material by horse power. This is mentioned to show what man may do if determined.

PIERCE & CO.

Shaft, 90 feet deep; horse hoister; 9 men; ore, zinc; air and escape shaft. Miners do not enter mine at hoisting shaft. This is a desirable arrangement, as miners never ought to enter nor leave a mine by hoisting shaft if possible to avoid it.

MCKINNEY & CRUSAN.

Shaft, 90 feet deep; horse hoister; No. men, 5; ore, zinc; air and escape shaft.

Output Nevada Mining Co. for year ending February, 1887: Lead, 124,595; zinc, 3,407,680 pounds, with two weeks' loss of time in May.

WEBB CITY DISTRICT.**CENTER CREEK MINING AND SMELTING CO.—W. C. STEWART, SEC'Y.**

Postoffice, Webb City, Mo.; location, N. W. 1-4 of S. W. 1-4 and S. W. 1-4 of N. W. 1-4, Sec. 17, and S. E. 1-4 of N. E. 1-4, and N. E. 1-4 of S. E. 1-4 of Sec. 18 of T. 28, R. 32; operators on royalty.

LICKLIEDER & CO.

Depth of shaft, 140 feet; steam friction hoister; steam crusher and jigs; No. of men, 9; air and escape shaft; no props used; ore, zinc.

S. M. DICKEY & CO.

Shaft, 135 feet deep; steam friction hoister; No. of men, 12; air and escape shaft; ore, zinc; no props.

GREENFIELD & CO.

Depth of shaft, 100 feet; horse hoister; No. men, 4; air and escape shaft; ore, zinc.

SMITH, HESS & CO.

Depth of shaft, 130 feet; horse hoister; No. of men, 4; air and escape shaft; ore, zinc.

M. J. LEWIS & CO.

Depth of shaft, 50 feet; horse hoister; No. of men, 3; air and escape shaft; ore, zinc.

BATTON & CO.

Shift, 100 feet deep; horse hoister; No. men, 2; ore, zinc; air and escape shaft.

BARKER & CO.

Depth of shaft, 130 feet; horse hoister; number of men, 11, ore, zinc; air and escape shaft; ladder.

J. TROXALL & CO.

Shaft, 110 feet deep; horse hoister; number of men, 5; ore, zinc; air and escape shaft; enter and leave mine through escape shaft.

SALLY & COOK.

Shaft, 115 feet deep; number of men, 4; horse hoister; air and escape shaft.

HATTON & CO.

Shaft, 140 feet deep; steam friction hoister; air and escape shaft; number of men, 17. One of the most productive zinc mines in the district.

JOSEPH J. FETTERS.

Mine idle when visited.

COLUMBIA & HARLAND AND COLUMBIA BROS'.

Shaft, 135 feet deep; steam friction hoister; steam crusher and rolls; jigs; number of men, 20; air and escape shaft.

STRINGER & CARY.

Shaft, 128 feet deep; horse hoister; number of men, 4; air and escape shaft; zinc and lead.

DUNLAP & BROWN.

Shaft, 125 feet deep; horse hoister; number of men, 15; air and escape shaft; zinc ore.

SPENCER & M'CONEY.**Three shafts—**

No. 1. Depth, 128 feet; working level, 85 feet; steam friction hoister; steam crusher and rolls; wire cable for hoisting; number of men, 8; ores, zinc and lead.

No. 2. Depth, 127 feet. Stopped to improve ventilation.

No. 3. Depth to working level, 65 feet; steam hoister; upright engine; number of men, 12; air and escape shafts; ores, zinc and lead. This is a productive and well managed mine.

DAVIS BROS'.

Depth, 120 feet; horse hoister; number of men, 17; air and escape shafts; ore, zinc. In good condition and well managed.

WEISE, JOURDAN & CO.

Depth, 130 feet; upright steam hoister; well ventilated; escape shaft; number of men, 15; ore, zinc. A very productive and well managed mine.

THOMAS & RICHARDS.

Depth, 124 feet; horse hoister; air and escape shaft; number of men; 3; ore, zinc.

Output, Stewart land, 1,993,150 pounds of lead ore; 28,190,470 pounds zinc ore.

GARRISON LEAD AND ZINC CO.

Location, E. 1-2 of N. E. 1-4 and E. 1-2 of W. 1-2 of N. E. 1-4, all in section 19, township 28, range 32; depth, 175 feet; steam hoister; number of men, 40; mine in good condition and well managed; very productive; for year ending February, 1887, nine months' work, lead, 124,595 pounds, zinc, 2,844,195 pounds.

TRACY LEAD AND ZINC CO.

Location, immediately south of the City of Carterville; began operation November 25, 1885; output, for year ending February, 1887; lead, 29,930 pounds, zinc, 985,736 pounds; Mr. William Leckie, president; Mr. Monroe Clark, superintendent. When we visited this mine only one shaft was being worked, by Hardy & Lillibridge; depth, 150 feet; steam upright hoister; air and escape shaft; number of men, 21; mine in good condition.

JOPLIN DISTRICT.

GRANBY MINING AND SMELTING CO.

Location, one mile northwest of Joplin. No statement rendered by company. Output, for year, about 960,000 pounds of zinc; amount of lead, not ascertained; operators, on royalty.

DILLON & REAGAN.

Depth, 91 feet; horse~~s~~ hoister; number of men, 5; air, sail; ore, zinc.

BAILY BROS'.

Depth, 30 feet; number of men, 3; ore, calamine.

BAILY & CO.

Depth, 50 feet; number of men, 4. Flooded when we visited mine.

YOCUM, SPENCER & CO.

Depth, 85 feet; horse hoister; lift pump; number of men, 8; ore, blonde; cutting air drift.

HOLDEN & CO.

Depth, 45 feet; horse hoister; number of men, 2; air pipe; ores, lead and zinc.

WARDEN & CO.

Depth, 60 feet, horse hoister; number of men, 4; ore, blonde.

COUNCILL & CO.

Depth, 80 feet; horse hoister; horse power blower; number of men, 3; lead, only.

MILAM, CARMAN & BORUFF.

Depth, 80 feet; horse hoister; number of men, 4; ore, blonde.

One shaft is being worked on land of Mr. E. Porter, of Joplin, by Davis, Moore & Spring. Depth, 100 feet; number of men, 6; horse hoister; lift pump; ores, lead and zinc.

DITTMAR CO.

Schifferdecker land; location, one mile east of Joplin; output for year ending February, 1887, lead, 348,743 pounds; zinc, 2,360,740 pounds. Mr. W. H. Proudfoot, agent. Operators, on royalty.

SELLERS BROS' & CURRY.

Shaft, 88 feet; horse hoister; lift pump; steam blower, air and escape shaft; number of men, 3; zinc and lead.

TURK, WILSON & CO.

Depth, 85 feet; horse hoister; number of men, 3; air and escape shaft; ores, lead and zinc.

HYDE & CO.

Depth, 68 feet; lead and zinc; horse hoister; air and escape; number of men, 3. The engine house of this company was burned just previous to our visit.

OSWEGO MINING CO.

Location, in sections 2, 11 and 12 in township 27, range 33; this company is working nine shafts, using three boilers, employing thirty men, hoisting by horse power. As mentioned in this report, the Oswego company controls Thurman mine in Newton county. Output from their land in Joplin district for year ending February, 1887: lead ore, 2,285,580 pounds; zinc ore, 2,451,890 pounds.

Some parties are mining on Oswego lands on a royalty, viz.:

Herring & Hunt; depth ninety-five feet; horse hoister; air and escape shaft; three men; lead and zinc.

CRAWFORD & CO.

(Colored miners.) Depth, 120 feet; number of men, two; lead and zinc; horse hoister.

W. SMITH & CO.

(Colored.) Depth, 100 feet; horse hoister; four men.

We find only six colored men operating mines where we have visited in Jasper county.

PORTER LAND.

Oswego company, Nugent; depth, sixty feet; horse hoister; air and escape; three men; lead and zinc.

PARSONOW & CO.

Depth, eighty-five feet; horse hoister; air by furnace; two men; lead and zinc.

GOLDEN & CO.

Depth, 104 feet; horse hoister; air and escape shaft and fan; six men; lift pump.

GUINN & LOYD.

Location, in sections 13 and 14, township 27, range 33; operating fifteen shafts; one steam friction hoister, balance, horse power; five

lift pumps, four boilers, one crusher and jigs; number of men, fifty; output for year ending February, 1887: lead ore, 2,063,540 pounds; zinc ore, 2,287,140 pounds.

The zinc ore in this mine is blende and calamine, the blende largely in excess.

E. LOYD.

New mine; location, in section 28, township 28, range 33; number of shafts, eighteen; average depth, fifty feet; ore, lead; one boiler, four lift pumps, one friction hoister, balance horse hoisters; number of men, forty; air and escape shafts; output not received.

MONTGOMERY LEAD AND ZINC CO.

Location, in sections 27, 34 and 28, township 28, range 33; operated by Taylor & Billingsly; eleven shafts; average depth, eighty feet; two boilers, one Allington, one friction hoister, one steam clutch hoister, nine horse hoisters, two blowers; all shafts have escapes but three; number of men, forty-five; output for year ending February, 1887: lead ore, 196,140 pounds; zinc ore, 5,149,000 pounds.

THACKER LAND.

Operators, Taylor & McCoy; south half of northwest quarter of section 34, township 28, range 33; one lift pump, one shaft; depth, thirty-five feet; horse hoister; six men; air shaft; ore, zinc.

CUNNINGHAM LAND.

Operators, Taylor & Swartz; location, east half of southwest quarter of section 27, township 28, range 33; one shaft; depth, thirty-four feet; one lift pump; horse hoister; six men; ore, zinc.

CARTER LAND.

Operated by Rice & James; one shaft; depth, 115 feet; steam friction hoister; one lift pump; four men; lead and zinc.

Some mining with good prospects of success has been done in southeast quarter and south half of section 12, and north half of northeast quarter of section 13, all in township 28, range 33, in Jasper county.

In Newton county promising developments have been made in west half of southeast quarter of section 19, township 27, range 33. Also in east half of northwest in same section. The northeast quarter of section 32, township 27, range 33 is promising territory.

LEHIGH DISTRICT.

LEHIGH DRAINAGE & MINING CO.

Location, a part of section 7, township 28, range 33; president, C. H. Anderson, postoffice, Lehigh, Mo.; book-keeper and weigher, Mr. C. P. Gallienie. This company has four boilers, three lift pumps, one steam pump, one steam friction hoister; operating one shaft; number of men, twenty-five in and around mine; depth of shaft, seventy feet; air and escape shaft; character of ore, free blonde.

RANKIN & PEARSON.

On royalty; shaft eighty feet deep; drained by L. M. & D. Co.; steam hoister; twelve men; air and escape shaft; ore, free blonde.

BAILY & CO.

Shaft seventy feet deep; drained by L. M. & D. Co.; horse hoister; six men; air and escape shaft; free blonde.

WARRINGTON & CO.

Drained by same company; working on same level; six men; free blonde.

MESPLAY & STUCKEY.

Shaft seventy feet; two ten inch pumps; steam hoister; seven men; free ore, blonde.

THE L., M. & D. CO.

Are constantly adding to their machinery, and have an excellent property. Output for nine months in 1886: free blonde, 4,344,000 pounds.

M'FERRAN & CO.

Postoffice, Carl Junction, Mo.; draining a portion of Lehigh Mine; they are using three boilers and five lift pumps; a co-operative company of miners, eleven in number; are working one shaft; drained by McFerran & Co.; depth, 85 feet; they are very successful.

OSBORNE & CO.

Drained by McFerran; shaft 80 feet deep; steam hoister; 8 men; mine, good.

A very promising strike has been made recently in east part of section 12, township 28, range 34, adjoining Lehigh on the west.

GULCH MINE.

Hunt estate; northeast 1-4 of section 18, township 28, range 33; an excellent mine if properly worked.

SHERWOOD MINE.

Operated by West Joplin Lead and Zinc Co.; superintendent, Ed. Hedburg; postoffice, Lehigh, Mo.; location, southwest 1-4 of section 17, township 28, range 33; two boilers, one 80 and one 45 horse-power; one 10-inch pump; one 35-horse engine; one small boiler for steam hoister; sinking draining shaft to depth of 200 feet; nine air shafts; thirty men; ore in paying quantity has been mined at a depth of 185 feet, and no bottom found to the deposit; the ore at that depth is all blonde; lead ore is found at less depth; output, nine months, lead ore, 50,000 pounds; zinc, 2,080,000 pounds.

Want of time prevented us from visiting many productive and interesting mines in southeast and southwest Missouri. There are no published statistics of the working of the mines in southeast Missouri, from which we might make extracts, and the same is true of

nearly all the lead and zinc producing counties in this State, excepting only Jasper, Newton and Lawrence counties.

Mr. John N. Wilson, of Carthage, Missouri, has published a pamphlet of accurate statistics, which enables us to report on some mines we could not visit. We copy the following from said pamphlet, and acknowledge its worth to us in making this report:

NORTH BELLEVILLE LEAD AND ZINC CO.

Southeast northwest section 25, township 28, range 34; output for year ending February, 1887, lead ore, 63,359 pounds; zinc, 1,899,-861 pounds.

BURCH LEAD AND ZINC CO.

Section 11, township 27, range 32; output for five months, 155,513 pounds of zinc ore.

JOHNSON MINES.

Four miles southeast of Joplin; a new mine; output from July to March, 162,733, lead ore.

M'CLELLAND & MAUPIN.

From one shaft just below Grand Falls of Shoal Creek, in Newton county, 70,000 pounds lead; this company owns in that vicinity 440 acres of land.

MOTLEY MINING CO.

Northeast 1-4 of southeast 1-4 of section 17, township 28, range 32; output, two months, lead ore, 5 ,400 pounds; zinc, 91,800 pounds.

WESTERN LAND AND MINERAL CO.

Mine known as Troup Land; Dan Collins, superintendent; southeast of Webb City; 100 men; output, lead ore, 281,558 pounds; zinc ore, 84,970 pounds.

ANDEEW M'CORKEE & J. W. AYLOR.

Location, southeast 1-4 of southeast 1-4, section 18, township 28, range 32; lead ore, 120,000 pounds; zinc ore, 1,200,000 pounds.

AYLOR BROS.

Location, forty acres north of Troup Land; output for three months, 50,000 pounds lead ore.

CAETHAGE MINING CO.

Location, Pleasant Valley, two miles southwest of Carthage; this mine produced blonde to the amount of \$40,000 from August, 1882, to May, 1884, when mining stopped; mining was resumed in November, 1886, and up to March 1, 1887, produced 86,000 pounds of zinc ore worth \$10,000.80; this mine is now owned and operated by Messrs. Garrison Bros., of St. Louis and Carthage; they have an excellent plant, with improved machinery; they have invested largely, and their territory is very promising; employ twenty to thirty men.

BLUE HERRON MINING CO.

Location, northeast 1-4 of northwest 1-4 of section 17, township 28, range 30; operate only one shaft; output, 41,000 pounds zinc ore; five men.

ALBA MINING AND SMELTING CO.

Location, section 15, township 29, range 32; mining desultory; drainage poor; ores, lead, calamine and blonde; output, lead, 10,000 pounds; zinc, 200,000 pounds; number of men, twenty; only lead and zinc mine in Jasper county north of Spring River Valley.

AURORA MINING DISTRICT.

Location, principally township 26, range 25, Lawrence county.

Aurora mines are operated by the following named parties, organized, and by parties working on royalty not named:

G. M. BUCHANAN.

Output for seven months, ending last February, 479,000 pounds of zinc ore.

AURORA M. & S. CO.

Carr McNatt, treasurer; output for year ending February, 1887; lead ore, 3,290,000 pounds; value, \$65,800,000.

From some shallow mines, greatest depth 38 feet, on land of S. G. Elliott, the yield for seven months was \$3,700 in lead ore, carbonate and sulphide.

Mining is being done in this district on the land of Thos. Lyles by McCoy & Brinkerhoff, and others; output not learned.

Also in this locality Rinker, Eagle & Co., Dwight Smelting Co., one lead furnace; Harry Wood Mining Co., E. Barrington & Co.; no report received of workings nor output.

Aurora is a pocket mine, and likely to prove of considerable extent judging from surface indications. The ore-bearing material is not similar to that of the western part of Jasper county, but is very much like that of Sarcoxie Mine in the eastern part of Jasper.

In giving output from mines reported we have copied from Mr. Wilson's report up to February, 1887. This is only partial, as many localities are not included.

From a pamphlet published by Col. Campbell since the issue of the Wilson pamphlet, we get the following report of output from a few mines mentioned by Wilson. Col. Campbell's report, which is authentic, shows a heavy increase of output:

Center Creek Mining Company, year ending February 7, 1887 (Wilson): Lead, 1,993,150 pounds; zinc, 28,190,470 pounds; total, \$271,161.98.

Same company, for year ending July, 1887, (Campbell), \$331,263.65. This shows an increase of nearly 25 per cent.

Garrison Lead and Zinc Company, year ending February 7, 1887, (Wilson): Total output, value, \$28,778.26.

Same mine, year ending July, 1887, (Campbell): Total output, value, \$57,594.58. Increase, a little more than 100 per cent.

Carterville Company, consolidated, year ending February, 1887, (Wilson): Total output, \$110,213.81.

Same company, year ending July, 1887, (Campbell): Total output, \$115,763.61.

The three reports, above given, are the highest, lowest and medium, showing an increase on average of about 43 per cent., and we think that we would be safe in saying 50 per cent., which we will use for convenience.

This shows from the mines <i>reported</i> in Newton, Jasper and Lawrence an output, cash value.....	\$2,665,933 41
From the mines where no <i>exact</i> reports have been obtained, we ap- proximate, using old statistics.....	800,000 00
Total for three counties.....	\$3,465,933 41

Output St. Francois county, not including Granite nor Valle Mine:	
St. Joe Mine (not including 12 to 14 per cent. nickel in matte)....	\$1,008,000
Doe Run (anticipated)	336,000
Iron Mountain (limited).....	409,324
Total obtainable.	\$1,753,324
The Granite and product of Valle would make this output over \$2,000,000.	
Iron county, not including Granite.....	\$800,000
Madison county, including a portion of St. Francois, and not the nickel and cobalt of Mine Lamotte	320,000
Washington county, four mines only.....	78,770
Total for four counties in Southeast Missouri.....	\$2,952,004
Total for three counties in Southwest Missouri.....	3,465,933
Grand total for seven counties	\$6,418,027

The other ore-producing counties not visited for want of time in the field.

In the six counties, Jasper, Newton, Madison, Iron, St. Francois and Washington, we find 4,734 men, outside the Granite mines and quarries. It is a safe estimate to add 1,000 as teamsters, hauling ore, wood, coal, etc., making a total of 5,734.

Result of labor, counting only miners, each man, \$1,355.

Counting miners and teamsters, each man, \$1,119.

GENERAL REMARKS.

The method of mining in Southwest Missouri is by shaft. The shafts vary in size, according to depth of mine. They are from 4 x 5 feet to 6 x 8 feet in length and breadth. They are curbed with sawed timber or poles.

Hoisting is done by windlass, horse power and steam.

The lands are not being worked directly by capitalists. Miners lease lots 200 feet square, mine it to suit themselves, and generally have the right to sell their ores to whom they please, paying the owner royalty. This plan renders the miners of Southwest Missouri better opportunities for acquiring wealth and makes them free and independent.

In some localities the land owners drain the mines, for which they charge the miners additional royalty.

The light output of lead ore does not indicate that it is exhausted. Although lead ore is usually worth about twice as much per ton as blende (zinc ore), the zinc bodies of ore are so much more extensive that the lead ore is not sought for. The zinc lies usually under the lead and the miner, after passing through the lead formation into the zinc, rarely goes back to the lead, unless it is very rich.

The method of cleaning ore is by sluicing and steam or hand-jig. By a jig, the ores in a sieve are shaken in the water; the ore having the greater specific gravity, settles to bottom of sieve.

Many accidents (some of which might be avoided) occur in lead and zinc mines, yet taking into consideration the number of men engaged in that vocation, it cannot be classed as the most dangerous pursuit.

Wages in Jasper county for miners, \$1.75 to \$2.25 per day; shovellers, \$1.50 to \$1.75; jig men, \$2 to \$2.25.

A day's work is nine hours, except where three "shifts" are worked.

The miners, as a rule, are intelligent and seemingly contented. Strikes are unknown.

When a day's work is eight to nine hours, the laborer has ample time to acquire information, and it is surprising to see the number of newspapers sold at railroad stations to miners every Sunday morning. The miners are nearly all readers, and the intelligent laborer is the best workman.

It is hard for a miner who drinks to excess to find employment in the mines, and married men get the preference of employment.

The lead and zinc mining territory is very extensive. The western portion of Jasper county and the northwestern part of Newton county are remarkably rich in blende.

Some rich pockets of coal have been found in Jasper county, and geologists write that the coal measures cover the northwest portion of the county. Coal has been found by boring in that locality but has not been mined.

DEFINITION OF TECHNICAL NAMES OF ORES MENTIONED IN THIS REPORT.

Calamine—a hydrous zinc silicate.

Sphalerite—sulphide of zinc, *i. e.*, blende.

Cerussite—carbonate of lead ore—white.

Calcite—carbonate of lime.

Pyromorphite—lead phosphate.

Greenockite—sulphide of cadmium.

Galena—sulphide of lead.

Pyrite iron—sulphide of iron.

Dolomite—magnesium and calcium carbonate.

Baryte—heavy spar used in adulterating paints.

Chalco-Pyrite—copper and iron sulphide.

Malachite—copper carbonate.

Azurite—copper carbonate.

Witherite—barium carbonate.

Limonite—brown hematite.

Hematite—specular iron ore.

Graphite—black lead.

COAL AND MINERAL OUTPUT.

From the preceding report of the State Mine Inspector, we are enabled to make an approximately correct output of coal, lead, zinc and iron for the year ending October 31, 1887. The figures are entirely correct as to the mines inspected, but a large number of the lesser mines were not inspected, for the reason that under the law the time in which the inspections were to be made and the report prepared was limited to about four months—from the appointment of the Inspector, July 1st, to October 31st. All the more important mines are included in this report, but there are hundreds of less important ones that it was impossible in the limited time to officially visit, which, if fairly estimated, would swell the aggregates we present not less than twenty per centum. It is but proper to add that the discoveries and development of the extensive lead and zinc mines of Morgan and other counties in Central Missouri, were not made at the time the Mine Inspector's report was made.

SUMMARY OF COAL STATISTICS.

Total output for year ending October 31.....	2,865,996 tons.
Average value at mine.....	\$1.50 per ton.
Total average value at mine.....	\$4,298,994
Average pay for mining per ton.....	87½ cents.
Total amount paid for mining.....	\$2,445,796 50
Number of miners employed, about.....	7,000
Average annual earnings of miners.....	\$346 55
Number of day hands employed, about.....	1,600
Average annual earnings for day hands.....	\$300
Number of kegs of powder used.....	34,900
Number of mules employed, about.....	300
Mines inspected in sixteen counties.....	119

LEAD, ZINC AND IRON.

Total value of output at mines.....	\$6,418,027
Number of miners employed.....	5,734
Number of mines inspected in seven counties.....	112
Total value of coal, lead, zinc and iron output for the year.....	\$10,718,021

LABOR STRIKES IN MISSOURI.

LABOR STRIKES AND LOCKOUTS IN MISSOURI

The following pages relating to the strikes and lockouts in Missouri during the six years ending December 31, 1886, are the result of close investigations by the National Bureau of Labor, of which Hon. Carroll D. Wright is Commissioner, and which are kindly lent to this Bureau for its use in advance of the publication of the report under direction of the Honorable Secretary of the Interior.

The courtesy of the officers of the Interior Department is cheerfully acknowledged. As the statistics furnished are valuable for their accuracy and completeness, they will doubtless be of great interest to the student of labor problems.

I. STRIKES BY YEARS AND

(From Advance Sheets of Third An

	Industries and Years.	Locality.	Cause or Object.
1881.			
2244	Boots and Shoes: Employes.....	St. Louis	For disch'g 1 non-union emp
2245	Brick : Employes.....	St. Joseph	For increase of wages
Building trades:			
2246	Carpenters.....	St. Louis	" " "
2247	Bricklayers.....	Sedalia	" " "
2248	Hod carriers.....	"	Against reduction of wages
Cooperage:			
2249	Coopers, beer kegs	St. Louis	For increase of wages
Metals and Metallic Goods:			
2250	Employees, bolt works.....	"	For re-instm't 1 disch. empl.
2251	Employees, stove foundry...	"	For limitation of apprent'cs and disch 5 non-union men
2252	Employees, chain works....	"	For increase of wages.....
2253	Pudl'rs and roll'r's, wire wks	"	Against reduction of wages
2254	Employees, tinware factory	"	For increase of wages
2255	Moulders, iron works.....	Kansas City	For disch. 1 non-un. employe
2256	Employees, hardware fact'y	St. Louis	Against employm't of 4 ad- ditional apprentices
Mining :			
2257	Miners, etc., coal	Fulton	For increase of wages
2258	Miners, coal	Rich Hill	" "
Public Ways Construction:			
2259	Laborers, railroad.....	St. Joseph	" "
Tobacco:			
2260	Cigarmakers.....	St. Louis	" "
Transportation:			
2261	Employees, street railway..	"	For reduction of hours.....
2262	Switchmen	Kansas City	For increase of wages
1882.			
Building trades:			
2263	Painters	St. Louis	For uniform wages.....
2264	Hodcarriers.....	St. Joseph	For increase of wages
Metals and metallic goods :			
2265	Employees, tinware factory	St. Louis	For increase of wages.....
1266	Moulders, stove foundry...	"	Against reduction of wages
2267	Moulders, iron works.....	"	" " "

INDUSTRIES—MISSOURI.

(Annual Report, U. S. Bureau of Labor.)

Ordered by labor organization	Establish'ts Num- ber..	Days closed	Beginning ..	End.....	Duration days	Succeeded ..	Employes'		Employers' loss
							Assist- ance.	Loss..	
Yes..	1	35	March 27..	May 1, '81..	35	No.....	\$12,682	.....	\$15,000
No...	4	3	May 1.....	May 4, '81..	3	Yes....	1,485	.....	.....
Yes..	151	8	Apr. 4.....	Apr. 12, '81.	8	Yes....	1,560	\$400	.....
No...	10	2	Apr. 25.....	Apr. 27, '81.	2	Partly	400	.....	.....
Yes..	28	2	Apr. 25.....	Apr. 27, '81.	2	Yes....	596	.....	.....
" ..	1	21	May 12.....	June 2, '81..	21	"	5,000	1,000	2,000
" ..	1	3	Jan. 7.....	Jan. 10, '81.	3	"	900	.....	.....
" ..	1	60	Feb. 28.....	Feb. 1, '82..	337	No.....	100,000	25,000	100,000
" ..	1	144	Apr. 10.....	Sept. 1, '81.	144	"	10,000	2,000	5,000
" ..	1	10	June 3.....	June 13, '81	10	Yes....	2,700	500	5,000
" ..	2	21	Aug.....	Aug., '81..	21	No	1,260	.....	.....
" ..	1	.....	Dec.....	Dec., '81 ..	1	"	60	.....	.....
" ..	1	28	Dec. 21.....	Feb. 1, '82..	42	Yes....	17,490	.....	10,000
No...	1	7	Apr. 1.....	Apr. 8, '81..	7	"	270	.....	.....
" ..	1	28	Oct. 1.....	Oct. 29, '81.	28	No	19,500	500	1,000
" ..	1	7	May 5.....	May 12, '81.	7	Partly	124	.....	.....
Yes..	6	1	July 1.....	July 2, '81..	1	Yes....	60	300	.....
" ..	8	4	April 27.....	May 27, '81..	30	"	25,000	5,000	50,000
No...	5	.....	July 1.....	July 3, '81..	2	"	129	.....	.....
Yes..	140	.....	March 2 ...	Apr. 17, '82	46	No	\$38,500	\$1,340	\$20,000
" ..	33	2	June 12	June 14, '82.	2	"	700	.....	.....
" ..	2	.....	April 15.....	Apr. 22, '82.	7	Yes....	3,000	.....	.....
" ..	1	.....	May 24.....	June 7, '82.	14	"	720	.....	1,000
" ..	1	92	June 1.....	Sept. 1, '82.	92	No	46,800	5,000	5,000

II. STRIKES BY YEARS AND

(From Advance Sheets of Third An

No.	Industries and Years.	Number of Employees.					
		Before strike.			After strike.		
		Male . . .	Female . . .	Total . . .	Male . . .	Female . . .	Total . . .
1881.							
2244	Boots and Shoes: Employes	121	90	211	55	45	100
2245	Brick: Employes	300	.....	300	300	.....	300
Building Trades:							
2246	Carpenters	800	.....	800	800	.....	800
2247	Bricklayers	50	.....	50	50	.....	50
2248	Hod carriers	176	.....	176	176	.....	176
Cooperage:							
2249	Coopers, beer kegs	150	.....	150	150	.....	150
Metals and Metallic Goods:							
2250	Employes, bolt works	99	.....	99	100	.....	100
2251	Employes, stove foundry	300	.....	300	300	.....	300
2252	Employes, chain works	100	.....	100	100	.....	100
2253	Puddlers and rollers, wire works	100	.....	100	100	.....	100
2254	Employes, tinware factory	35	.....	35	35	.....	35
2255	Moulderers, iron works	35	.....	35	35	.....	35
2256	Employes, hardware factory	260	.....	260	190	.....	190
Mining:							
2257	Miners, etc., coal	20	.....	20	20	.....	20
2258	Miners, coal	250	.....	250	250	.....	250
Public Ways Construction:							
2259	Laborers, railroad	18	.....	18	18	.....	18
Tobacco:							
2260	Cigarmakers	30	.....	30	30	.....	30
Transportation:							
2261	Employes, street railway	1,000	.....	1,000	1,060	.....	1,000
2262	Switchmen	56	.....	56	56	.....	56
1882.							
Building trades:							
2263	Painters	700	.....	700	700	.....	700
2264	Hodcarriers	200	.....	200	200	.....	200
Metals and metallic goods:							
2265	Employes, tinware factory	300	.....	300	300	.....	300
2266	Moulderers, stove foundry	60	.....	60	60	.....	60
2267	Moulderers, iron works	300	.....	300	300	.....	300

INDUSTRIES—MISSOURI.

(nual Report, U. S. Bureau of Labor.)

Average daily wages.				Employes striking		Employes striking and involved.		New employes after strike.		Weekly working hours.	
Before strike		After strike		Daily pay.							
		Number.....		After		Before					
Male.....	Female.....	Male.....	Female.....	After	Before	Male.....	Female.....	Total	Male.....	Total	After strike.
Male.....	Female.....	Male.....	Female.....	After	Before	Male.....	Female.....	Total	Male.....	Total	Before strike.
\$2.75	\$1.00	\$2.40	\$1.00	110	\$2.75	\$2.40	121	90	211	36	59
1.65	2.18	.....	300	1.65	2.18	309	.....	300	.....	60
2.25	2.50	.....	800	2.25	2.50	800	.....	800	.....	60
4.00	4.10	.....	50	4.00	4.10	50	.....	50	.....	60
1.75	1.75	.....	176	1.75	1.75	176	.....	176	.....	60
2.50	2.75	.....	150	2.50	2.75	150	.....	150	.....	59
3.00	3.00	.....	99	3.00	3.00	99	.....	99	1	59
3.00	3.00	.....	295	3.00	3.00	300	.....	300	250	59
1.00	1.00	.....	100	1.00	1.00	100	.....	100	25	59
3.00	3.00	.....	100	3.00	3.00	100	.....	100	.....	59
2.00	2.00	.....	35	2.00	2.00	35	.....	35	1	60
2.46	2.46	.....	20	3.00	3.00	20	.....	20	20	60
2.00	2.09	.....	140	1.96	1.96	260	.....	260	.....	60
2.25	2.50	.....	20	2.25	2.50	20	.....	20	.....	60
3.50	3.50	.....	125	3.50	3.50	250	.....	250	50	60
1.15	1.25	.....	18	1.15	1.25	18	.....	18	10	60
2.00	2.25	.....	30	2.00	2.25	30	.....	30	30	59
1.90	1.90	.....	1,000	1.90	1.90	1000	.....	1000	800	84
1.97	2.07	.....	20	1.83	2.04	56	.....	56	.....	70
•	•	•	•	•	•	•	•	•	•
\$2.75	\$2.75	.....	700	\$2.75	\$2.75	700	.....	700	40	60
1.85	1.85	.....	200	1.85	1.85	200	.....	200	.....	60
2.00	2.25	.....	300	2.00	2.25	300	.....	300	25	59
2.00	2.00	.....	30	2.50	2.50	30	.....	30	.....	59
2.00	1.94	.....	35	2.50	2.25	300	.....	300	.....	60

I. STRIKES, BY YEARS AND INDUS-

No.	Industries and Years.	Locality.	Cause or Object.
1882.			
2268	Puddlers, rolling mill.....	St. Louis.....	Against reduction of wages
2269	Employes, rolling mill.....	"	" " "
2270	"	"	" " "
2271	"	"	For increase of wages.....
2272	Mould. & puddlers iron wks	"	" "
Mining:			
2273	Miners, etc., coal	Richmond.....	For increase of wages.....
2274	"	Huntsville.....	" "
2275	"	Elliott.....	" "
2276	"	Renick.....	" "
Tobacco:			
2277	Cigarmakers.....	St. Louis.....	Against reduction of wages
2278	"	"	Against system of b'ch bk'ng
2279	"	Kansas City.....	For increase of wages.....
1883.			
2280	Boots and Shoes:		
2281	Lasters	St. Louis.....	" "
2282	Stitchers.....	"	For adoption of union rules For increase of wages & dis- charge of 1 non-union empl'e
Building trades:			
2283	Plasterers	St. Louis	For increase of wages.....
2284	Carpenters, bricklayers, etc	"	" "
Cooperage:			
2285	Coopers.	"	" "
Glass:			
2286	Employes, wind. glass wks	"	Against reduction of wages
Leather and leather goods:			
2287	Horse-collar makers.....	St. Joseph.....	For increase of wages.....
Metals and metallic goods:			
2288	Employes, steel works.....	St. Louis.....	Against reduction of wages
2289	Moulderers, iron works.....	Kansas City.....	" " " "
2290	"	St. Joseph.....	For increase of wages.....
Printing and publishing:			
2291	Compositors.....	Kansas City.....	For discharge of foreman..
Railroad cars:			
2292	Employes, car works.....	St. Louis.....	Against emp'ment for. labor
Telegraphy:			
2293	(Strike of July 19, see N. Y.)	.....	.....

TRIES—MISSOURI—CONTINUED.

Ordered by labor organization	Establish'ts. Num- ber..	Days closed.	Beginning.	End.	Duration days.	Succeeded ..	Employes'		Employers' loss.....
							Loss..	Assist- ance..	
Yes ..	1	14	June 1.....	June 15, '82.	14	Partly ..	\$7,978	.....	\$2,000
" ..	1	21	June 1.....	June 22, '82	21	No ..	22,500	.....	.....
" ..	1	183	June 1.....	Dec. 1, '82.	183	" ..	47,000	\$2,000	25,000
" ..	1	.....	June 1.....	July 11, '82.	40	" ..	51,000	10,000	20,000
" ..	1	1	June 7.....	June 8, '82.	1	Yes ..	200	.....	.... ..
No ..	1	17	Jan. 15.....	Feb. 1, '82..	17	No ..	2,100	.....	.....
Yes ..	1	45	Sept. 1.....	Oct. 16, '82.	45	" ..	4,000	100	1,000
" ..	1	45	Sept. 1.....	Oct. 16, '82.	45	Partly ..	3,500	.....	1,200
" ..	2	45	Sept. 1.....	Oct. 16, '82.	45	Yes ..	6,000	.....	800
" ..	1	5	Jan. 18.....	Jan. 23, '82.	5	Yes ..	120	50	.....
" ..	15	70	July 10.....	Sept. 18, '82	70	" ..	9,107	665	2,700
" ..	1	3	Sept. 4	Sept. 7, '82.	3	" ..	52	4	.....
" ..	5	17	Aug. 1.....	Aug. 18, '83.	17	" ..	1,000	.....	.....
" ..	6	14	Aug. 14.....	Aug. 28, '83.	14	No ..	1,188	500	1,000
" ..	1	.....	Oct. 25.....	Nov. 1, '83..	7	" ..	90	.....	.....
Yes ..	47	14	May 2.....	May 16, '83.	14	Yes ..	20,000	500	.....
" ..	150	7	May 2.....	May 9, '83..	7	" ..	5,000	.....	\$500
" ..	20	5	Aug. 1.....	Aug 6, '83..	5	Partly ..	1,200	.....	200
" ..	1	160	Sept. 1.....	Feb. 8, '84.	160	Yes ..	27,400	15,000	.....
" ..	1	8	Aug. 29.....	Sept. 6, '83.	8	" ..	612	.....	.....
" ..	1	90	Jan. 1.....	*Apr. 1, '83.	90	No ..	84,000	20,000	500,000
" ..	1	89	Feb. 1.....	May 1, '83..	89	" ..	5,871	1,140	6,000
" ..	1	.....	Oct. 10.	Nov. 1, '83..	22	" ..	950	.....	.... ..
" ..	1	.....	July 14.....	July 15, '83.	1	" ..	90	.....	.... ..
No ..	1	1	March 6.....	March 7, '83	1	Yes ..	200	.....	.....
.....

*Date the strike was declared off.

II. STRIKES BY YEARS AND INDUS-

No.	Industries and Years.	Number of employees					
		Before strike.			After strike.		
		Male...	Female	Total...	Male...	Female	Total...
2268	Puddlers, rolling mill.....	330		330	330		330
2269	Employes, rolling mill.....	650		650	650		650
2270	Employes, rolling mill.....	200		200	100		100
2271	Employes, rolling mill.....	600		600	600		600
2272	Moulders and puddlers iron works.....	75		75	75		75
	Mining:						
3273	Miners, etc., coal.....	130		130	130		130
2274	Miners, etc., coal.....	90		90	65		65
2275	Miners, etc., coal.....	65		65	70		70
2276	Miners, etc., coal.....	140		140	130		130
	Tobacco:						
2277	Cigarmakers.....	20		20	20		20
2278	Cigarmakers.....	95	10	105	98	10	108
2279	Cigarmakers.....	8		8	8		8
	1883.						
	Boots and Shoes:						
2280	Lasters.....	*40		*40	*40		*40
2281	Lasters.....	*60		*60	*60		*60
2282	Stitchers.....	30	20	50	30	20	50
	Building trades:						
2283	Plasterers.....	600		600	600		600
2284	Carpenters, bricklayers, etc.....	1,500		1,500	1,500		1,500
	Cooperage:						
2285	Coopers.....	220		220	200		200
	Glass:						
2286	Employes, window glass works.....	100		100	100		100
	Leather and leather goods:						
2287	Horse-collar makers.....	35		35	35		35
	Metals and metallic goods:						
2288	Employes, steel works	1,400		1,400	†		†
2289	Moulders, iron works.....	44		44	41		41
2290	" "	50		50	50		50
	Printing and publishing:						
2291	Compositors.....	50		50	50		50
	Railroad cars:						
2292	Employes, car works.....	100		100	100		100
	Telegraphy:						
2293	(Strike of July 19, see New York.....)						

*Lasters only reported.

†Establishment permanently closed.

TRIES—MISSOURI—CONTINUED.

Average daily wages.		Employees striking		Employees striking and involved.		New employees after strike.		Weekly working hours.	
Before strike		After strike		Daily pay.					
Male...	Female...	Male...	Female...	Number.....		Male...	Female...	Total...	
\$2 01	\$2 00	30	\$4 66	\$4 57	330	330		60	60
2 12	1 99	200	4 25	3 83	650	650		60	60
1 68	1 64	40	2 50	2 25	200	200		60	60
2 50	2 50	600	2 50	2 50	600	600		48	48
2 75	3 00	75	2 75	3 00	75	75		59	59
1 33	1 33	130	1 33	1 33	130	130		54	54
2 00	2 00	75	2 00	2 00	90	90	25	40	50
2 25	2 40	55	2 25	2 40	65	65	5	40	45
3 00	2 34	112	2 00	2 34	140	140	5	38	50
1 50	1 50	6	2 25	2 25	20	20		60	60
1 50	\$1 15	31	2 10	2 10	95	10	105	60	60
2 15	2 17	3	2 75	2 80	8	8		60	60
*2 00	*2 50	40	2 00	2 50	40	40		59	59
*1 65	*1 65	60	1 65	1 65	60	60		59	59
2 40	1 00	15	1 00	1 00	15	15	15	60	60
4 00	4 50	600	4 00	4 50	600	600		59	59
3 25	3 75	1,500	3 25	3 75	1500	1500		59	59
2 00	2 13	2 20	2 00	2 13	220	220		59	59
2 00	2 00	25	2 00	2 00	100	100		59	59
2 50	2 75	35	2 50	2 75	35	35		54	60
2 00	†	1,400	2 00	†	1400	1400		59	†
2 15	1 91	19	3 00	2 50	44	44	17	60	60
2 00	2 00	25	2 00	2 00	25	25	48	60	60
2 25	2 25	40	2 25	2 25	40	40	40	60	60
2 00	2 00	100	2 00	2 00	100	100		59	59

*Lasters only reported.
†Establishment permanently closed.

I. STRIKES BY YEARS AND INDUS-

No.	Industries and year.	Locality.	Cause or object.
	1883.		
2294	Tobacco: Cigarmakers.....	St. Louis.....	Against reduction of wages
2295	"	St. Joseph.....	For increase of wages.....
	Transportation:		
2296	Laborers and wharf hands.	St. Louis.....	" "
2297	Switchmen	Kansas City.....	" "
2298	Switchers' helpers.....	"	" "
2299	Engin'r's and firemen, R. R.	St. Louis.....	For paym't of wag. over-due
	Miscellaneous:		
2300	Shovellers, sand.....	St. Louis.....	For increase of wages.....
	1884.		
2301	Clothing: Tailors	"	For increase of wages
	Cooperage:		
2302	Coopers	"	For increase of wages.....
	Leather and leather goods:		
2303	Horse collar-makers.....	Kansas City.....	For increase of wages
	Metals and metallic goods:		
2304	Employes, stove factory...	St. Louis	Against reduction of wages.
	Printing and publishing:		
2305	Employes.	Webster.....	Against reduction of wages and discharge of foreman.
	Tobacco:		
2306	Cigarmakers	St. Louis	Against reduction of wages.
2307	Cigarmakers	"	Against reduction of wages.
2308	Cigarmakers	"	Ag'st system of b'ch brk'ng.
	Transportation:		
2309	Drivers, street railway....	"	For increase of wages.....
	1885.		
2310	Boots and shoes: Employes.	"	For adoption of union rules.
	Clothing:		
2311	Knitters, hosiery factory..	"	Against reduction of wages.
2312	Employes, hosiery factory.	"	In sympathy with strike elsewhere.....
2313	Employes, hosiery factory	"	For increase of wages.....
	Leather and leather goods:		
2314	Horse collarmakers.....	"	For increase of wages.....
	Lumber:		
2315	Employe, saw mill.....	Hannibal.....	For increase of wages.....

TRIES.—MISSOURI.—CONTINUED.

Ordered by labor organization.....	Establish'ts			Beginning	End.	Duration days	Succeeded:	Employes'		Employers' loss.....
	Num-ber..	Days closed						Loss..	Assist-anee..	
Yes..	6.....	Jan. 22.....	Mar. 12, '83.			49	Yes....	\$4,410	\$688	\$2,000.....
" ..	3.....	1 Apr. 23.....	Apr. 24, '83			1	" ..	53		.....
No ..	1.....	March 3.....	March 4, '83			1	No	75		100.....
" ..	4.....	Oct. 25.....	Oct. 27, '83			2	" ..	350		.....
" ..	1.....	Oct. 25.....	Oct. 31, '83			6	" ..	240		.....
" ..	1.....	Nov. 29.....	Dec. 6, '83..			7	Yes....	1,500		1,500.....
No ..	1.....	May 1.....	May 2, '83..			1	No	\$175		.....
Yes..	5.....	Apr. 15.....	May 1, '84..			15	Yes....	595		\$400.....
" ..	5.....	15 Aug. 1.....	Aug. 16, '84.			15	Partly..	2,500	\$500	900.....
No ..	1.....	2 June 2.....	June 4, '84.			2	Partly..	35		.....
Yes..	1.....	1 June 16.....	June 17, '84			1	Yes....	750		.....
No ..	1.....	7 Sept. 15.....	Sept. 22, '84			7	" ..	140		200.....
Yes..	1.....	28 Feb. 4.....	Mar. 3, '84.			28	" ..	252	197	.....
" ..	1.....	63 Aug. 4.....	Oct. 6, '84.			63	" ..	891	124	250.....
" ..	1.....	41 Nov. 10.....	Dec. 21, '84.			41	" ..	1,733	117	250.....
No ..	1.....	1 Sept. 3.....	Sept. 4, '84.			1	Partly..	100		500.....
Yes..	1.....	9 Aug. 1.....	Aug. 10, '85			9	No.....	2,189		500.....
No ..	1.....	59 Feb. 23.....	Apr. 23, '85			50	" ..	187		.....
" ..	1.....	Feb. 23.....	Apr. 23, '85			59	" ..	700	120	.....
" ..	1.....	Mar. 5.....	Apr. 15, '85			41	" ..	216	90	.....
Yes..	11.....	Mar. 2.....	Mar. 16, '85			14	Yes....	6,600	7,000	1,000.....
No ..	9.....	14 May 25.....	June 8, '85..			14	No.....	9,056		4,000.....

II. STRIKES BY YEARS AND INDUS-

No.	Industries and years.	Number of employees.					
		Before strike.			After strike.		
		Male	Female	Total	Male	Female	Total
	Tobacco:						
2294	Cigarmakers	63	4	67	69	5	74
2295	"	*35		*35	*35		*35
	Transportation:						
2296	Labors and wharf hands.....	50		50	50		50
2297	Switchmen	81		81	81		81
2298	Switcher's helpers.....	32		32	32		32
2299	Engineers and firemen, railroad.....	100		100	100		100
	Miscellaneous:						
2300	Shovelers, sand.....	100		100	100		100
	1884.						
	Clothing:						
2301	Tailors	17		17	17		17
	Cooperage:						
2302	Coopers	200		200	200		200
	Leather and leather goods:						
2303	Horse-collarmakers.....	10		10	10		10
	Metals and metallic goods:						
2304	Employes, stove factory.....	300		300	300		300
	Printing and publishing:						
2305	Employes	12	3	15	12	3	15
	Tobacco:						
2306	Cigarmakers.....	6		6	6		6
2307	"	10		10	10		10
2308	"	30		30	32		32
	Transportation:						
2309	Drivers, street railway.....	60		60	60		60
	1885.						
	Boots and shoes:						
2310	Employes	125	25	150	125	25	150
	Clothing:						
2311	Knitters, hosiery factory.....		5	5		15	15
2312	Employes, hosiery factory.....	2	80	82	2	100	102
2313	"	1	150	151	1	150	151
	Leather and leather goods:						
2314	Horse collarmakers	200		200	200		200
	Lumber:						
2315	Employes, saw mill.....	556		556	564		564

*Cigarmakers only reported.

TRIES.—MISSOURI.—CONTINUED.

Average daily wages.				Employes striking		Employes striking and involved.		New employes after strike.		Weekly working hours.	
Before strike		After strike		Pay day.							
Male...	Female...	Male...	Female...	Number.....		Before	After...	Total...		Total...	
\$1 60	\$1 05	\$1 60	\$1 05	21	\$2 00	\$2 00	63	67	6	60	60
*1 50	.....	*1 67	.....	35	1 50	1 67	35	35	1	48	48
1 50	.....	1 50	.....	50	1 50	1 50	50	50	25	25	60
2 16	.....	2 16	.....	31	2 00	2 00	81	81	3	3	70
2 10	.....	2 10	.....	20	2 00	2 00	20	20	12	12	70
2 50	.....	2 50	.....	100	2 50	2 50	100	100	.....	.....	60
1 75	.....	1 75	.....	100	1 75	1 75	100	100	100	100	59
2 50	.....	2 75	.....	17	2 50	2 75	17	17	9	9	59
1 50	.....	1 65	.....	200	1 50	1 65	200	200	.....	.....	59
1 75	.....	1 84	.....	10	1 75	1 84	10	10	.....	.....	60
2 75	.....	2 75	.....	300	2 75	2 75	300	300	.....	.....	59
1 70	1 00	1 70	1 00	15	1 56	1 56	12	3	15	.....	60
1 75	.....	1 75	.....	6	1 75	1 75	6	6	.....	.....	60
1 65	.....	1 75	.....	3	2 10	2 10	10	10	.....	.....	60
1 65	.....	1 65	.....	12	2 00	2 00	30	30	2	2	60
1 70	.....	1 75	.....	60	1 70	1 75	60	60	10	10	72
2 25	1 00	2 25	1 00	150	2 04	2 04	125	25	150	.....	59
1 25	1 00	1 25	1 00	5	1 25	1 00	5	5	15	15	60
1 25	65	1 25	65	6	65	65	6	6	26	26	60
2 50	67	2 50	67	9	67	67	9	9	9	9	60
2 75	.....	3 00	.....	200	2 75	3 00	200	200	25	25	59
1 46	.....	1 46	.....	125	1 25	1 25	515	515	24	24	60

*Cigarmakers only reported.

L S—18

I. STRIKES BY YEARS AND INDUS-

No.	Industries and years.	Locality.	Cause or object.
1885.			
2316	Machines and machinery:		
2318	Employes R. R. mach. shop	Moberly	Against reduction of wages.
2317	Employes R. R. mach. shop	"	" violation of agreement.
Metals and metallic goods:			
2318	Horseshoers.....	St. Louis.....	For increase of wages.....
2319	"	"	" "
2320	"	"	" "
2321	"	"	" "
2322	Laborers, iron foundry	Hannibal	" "
Mining:			
2323	Miners, etc., coal.....	Bevier	Against reduction of wages.
2324	"	Richmond	" "
2325	Miners, coal.....	Huntsville	" "
2326	"	Elliott	" "
2327	"	Huntsville	" "
2328	"	Higbee	" "
2329	Miners, etc., coal.....	Lex'gt'n & Richm'd	For increase of wages.....
2330	"	Richmond	" "
2331	"	Cord'r & Higg'svile	" "
2332	"	Higginsville	" "
2333	"	Renick	Against reduction of wages.
2334	Miners, coal.....	Rich Hill	For increase of wages.....
Printing and publishing:			
2335	Compositors.....	Sedalia	For discharge of three non-union men.....
2336	"	St. Louis	For increase of wages.....
Railroad cars:			
2337	Employes, car works.....	"	Against reduction of wages.
Rope and bagging:			
2338	Empl'es, bagging factory	"	For increase of wages.....
Ship building, etc:			
2339	Empl'es, ship build'g yard	"	" "
Stone quarrying and cutting:			
2340	Quarry men	Hannibal	In sympathy with strike elsewhere.....
2341	" granite.....	Graniteville	Against reduction of wages.
Tobacco :			
2342	Cigarmakers	Brunswick	" "
2343	"	St. Louis	" "
2344	"	"	" "
2345	"	"	" "
2346	"	"	For increase of wages and against truck system
Transportation :			
2347	Employes, railroad comp'y	"	For increase of wages.....
2348	Switchmen and yardmen	Kansas City	Against reduction of wages.
2349	Drivers and conductors, street railway	St. Louis	For reduction of hours.....

TRIES.—MISSOURI.—CONTINUED.

Ordered by Labor organi- zations... Establish 'ts	Days closed	Beginning.	End.	Duration days	Succeeded...	Employes'		Employers' loss....
						Loss..	Assist- ance..	
No ..	1	17 Feb. 27.....	Mar. 16, '85	17	Yes.....	\$10,125	\$ 1,250	\$60,000
Yes..	1	3 May 25.....	May 28, '85.	3	Partly..	2,000	.....	5,000
" ..	1	May 9.....	June 1, '85.	23	No ..	270	.....	.....
" ..	12	May 9.....	May 26, '85.	17	" ..	1,875	.....	.....
" ..	1	May 9.....	June 1, '85.	23	Yes.....	180	.....	.....
" ..	1	May 9.....	May 23, '85.	14	" ..	180	.....	.....
No ..	1	6 May 26.....	June 1, '85.	6	No ..	540	.....	.....
Yes..	4	91 April 1.....	July 1, '85.	91	No ..	75,000	5,000	20,000
No ..	6	92 May 1.....	Aug. 1, '85.	92	Partly ..	30,000	.....	500
" ..	1	22 May 1.....	May 23, '85.	22	Yes.....	2,500	.....	500
" ..	1	31 May 1.....	June 1, '85.	31	" ..	1,200	.....	500
No ..	1	21 May 1.....	May 22, '85.	21	Yes.....	2,200	.....	100
" ..	1	12 May 1.....	May 13, '85.	12	No ..	1,760	100	5,000
" ..	4	30 June 16.....	July 16, '85.	30	Partly ..	18,000	.....	.....
" ..	2	77 June 16.....	Sept. 1, '85.	77	" ..	10,062	.....	.....
" ..	5	64 June 16.....	Aug. 19, '85.	64	" ..	10,000	.....	.....
" ..	1	46 June 16.....	Aug. 1, '85.	46	Yes.....	918	.....	.....
" ..	1	51 June 25.....	Aug. 15, '85.	51	" ..	6,000	145	2,500
" ..	2	14 Sept. 1.....	Sept. 15, '85.	14	No ..	3,000	.....	500
Yes..	1	Jan. 26.....	Jan. 31, '85.	5	Yes... ..	118	.....	100
" ..	2	Oct. 9.....	Oct. 10, '85.	1	" ..	50	.....	.....
" ..	1	1 April 11.....	Apr. 12, '85.	1	Yes.....	500	.....	.....
" ..	1	March 10...	Mar. 18, '85.	8	Yes.....	200	50	.....
" ..	1	61 June 1.....	Aug. 1, '85.	61	Yes.....	4,500	1,000	1,000
No ..	1	4 May 25.....	May 29, '85.	4	No ..	\$292	.....	.....
" ..	1	3 June 1.....	June 4, '85.	3	Yes.....	211	.....	.....
Yes..	1	14 Jan. 12.....	Jan. 26, '85.	14	" ..	324	55	250
" ..	1	11 Jan. 15.....	Jan. 26, '85.	11	" ..	551	114	300
" ..	3	33 Jan. 28.....	Mar. 2, '85.	33	" ..	1,167	382	.....
" ..	1	14 June 22.....	July 6, '85.	14	" ..	89	16	.....
" ..	1	20 Sept. 15.....	Oct. 5, '85.	20	" ..	92	16	.....
No ..	1	March 9.....	Mar. 17, '85.	8	" ..	50,000	.....	125,000
" ..	2	8 March 9.....	Mar. 17, '85.	8	" ..	6,619	.....	.....
Yes..	6	4 Oct. 6.....	Oct. 22, '85.	16	No ..	36,750	5,000	75,000

II. STRIKES BY YEARS AND INDUS-

No.	Industries and years.	Number of employes.					
		Before strike.			After strike.		
		Male...	Female...	Total...	Male...	Female...	Total...
Machines and machinery :							
2316	Employes, railroad machine shop.....	450	.....	450	444	.....	444
2317	" " "	444	.....	444	444	.....	444
Metals and metallic goods :							
2318	Horseshoers.....	6	.....	6	6	.....	6
2319	" " "	50	.....	50	50	.....	50
2320	" " "	4	.....	4	4	.....	4
2321	" " "	6	.....	6	6	.....	6
2322	Laborers, iron foundry.....	45	.....	45	45	.....	45
Mining :							
2323	Miners, etc., coal.....	700	.....	700	700	.....	700
2324	" " "	250	.....	250	250	.....	250
2325	Miners, coal.....	80	.....	80	70	.....	70
2326	" " "	60	.....	60	26	.....	26
2327	" " "	90	.....	90	75	.....	75
2328	" " "	80	.....	80	60	.....	60
2329	Miners, etc., coal.....	555	.....	555	545	.....	545
2330	" " "	115	.....	115	115	.....	115
2331	" " "	140	.....	140	140	.....	140
2332	" " "	25	.....	25	25	.....	25
2333	Miners, coal.....	115	.....	115	85	.....	85
2334	" " "	200	.....	200	225	.....	225
Printing and publishing :							
2335	Compositors.....	14	3	17	14	3	17
2336	" " "	18	.....	18	18	.....	18
Railroad cars :							
2337	Employes, car works.....	250	.....	250	250	.....	250
Rope and bagging :							
2338	Employes, bagging factory.....	50	.....	50	50	.....	50
Ship building, etc. :							
2339	Employes, ship building yard.....	90	.....	90	90	.....	90
Stone quarrying and cutting :							
2340	Quarrymen.....	65	.....	65	65	.....	65
2341	" granite	27	.....	27	27	.....	27
Tobacco :							
2342	Cigarmakers.....	15	.....	15	15	.....	15
2343	" " "	36	.....	36	36	.....	36
2344	" " "	23	.....	23	23	.....	23
2345	" " "	4	.....	4	4	.....	4
2346	" " "	3	.....	3	4	.....	4
Transportation :							
2347	Employes, railroad company.....	16,000	.....	16,000	16,000	.....	16,000
2348	Switchmen and yardmen	345	.....	345	343	.....	345
2349	Drivers and conductors, street railway	1,500	.....	1,500	1,500	.....	1,500

TRIES—MISSOURI.—CONTINUED.

Average daily wages.		Employes striking		Employes striking and involved.		New employes after strike.		Weekly working hours.	
Before strike	After strike.	Daily pay.		Male...	Female...	Total...	Male...	Total...	After strike.
		Number...	Before...	Male...	Female...	Total...	Male...	Total...	Before strike.
Male...	Female...	Male...	Female...	Male...	Female...	Total...	Male...	Total...	Before strike.
\$1 50	\$1 50	444	\$1 50	444	\$1 50	444	444	444	40
1 50	1 50	444	1 50	444	1 50	444	444	444	40
\$2 50	2 50	6	2 50	2 50	6	6	1	1	60
2 50	2 50	50	2 50	2 50	50	50	.....	.....	60
2 25	2 50	4	2 25	2 50	4	4	.....	.....	60
2 50	2 75	6	2 50	2 75	6	6	2	2	60
2 00	2 00	6	1 35	1 35	45	45	2	2	60
1 75	1 50	700	1 75	1 50	700	700	300	300	54
1 75	1 55	250	1 75	1 55	250	250	.....	.....	60
2 00	2 00	65	2 00	2 00	60	80	.....	.....	54
2 00	2 00	50	2 00	2 00	60	60	.....	.....	60
1 50	1 50	82	1 50	1 50	90	90	.....	.....	50
2 00	2 00	70	2 00	2 00	80	80	54	54	36
1 33	1 35	545	1 33	1 35	545	545	.....	.....	54
1 33	1 35	115	1 33	1 35	115	115	.....	.....	54
1 33	1 35	140	1 33	1 35	140	140	.....	.....	54
1 33	1 40	25	1 33	1 40	25	25	.....	.....	54
1 25	1 40	85	1 25	1 40	115	115	16	16	54
1 50	1 50	90	2 00	2 00	200	200	115	115	60
2 00	\$1 50	2 00	\$1 50	14	1 91	1 94	11	3	60
2 83	3 00	18	2 83	3 00	18	18	.....	.....	59
2 50	2 50	250	2 50	2 50	250	250	.....	.....	59
.....	68	80	50	68	80	50	50	.....	59
2 00	2 50	90	2 00	2 50	90	90	.....	.....	59
1 50	1 50	65	1 50	1 50	65	65	.....	.....	60
2 60	2 60	27	2 60	2 60	27	27	.....	.....	60
1 80	1 80	6	2 50	2 50	15	15	.....	.....	60
1 75	1 75	20	2 00	2 00	35	35	.....	.....	60
1 75	1 75	23	1 75	1 75	23	23	.....	.....	60
1 85	1 85	2	2 00	2 00	4	4	.....	.....	60
1 80	1 75	2	2 00	2 25	3	3	1	1	60
1 67	2 00	3,900	1 75	2 10	3900	3900	.....	.....	60
2 40	2 43	136	1 74	1 83	345	345	.....	.....	70
1 75	1 76	1,500	1 75	1 75	1500	1500	1200	800	98

I. STRIKES BY YEARS AND INDUS-

	Industries and years.	Locality.	Cause or object.
	1885.		
2350	Miscellaneous : Employes, lime kiln	Hannibal	In sympathy with strike elsewhere.....
2351	" "	"	In sympathy with strike elsewhere.....
	1886.		
2352	Boots and shoes : Employes	St. Louis.....	For increase of wages.....
2353	Building trades : Carpenters.....	"	For discharge of non-union employees.....
2354	Stair builders	"	For increase of wages.....
2355	Plumbers	"	For reduction of hours.....
2356	Roofers, gravel & compos'n	"	For " "
2357	Plumbers	Kansas City	For discharge of non union employees & red'ct'n of hrs
2358	"	"	For discharge of non-union employees & red'ct'n of hrs
	Food preparations :		
2359	Bakers	St. Louis.....	Against reduction of wages.
2360	"	Kansas City.....	Against being forced to board with employer.....
2361	"	"	Against being forced to board with employer.....
2362	"	"	Against being forced to board with employer.....
	Furniture :		
2363	Cabinetmakers	St. Louis.....	For increase of wages
2364	Carvers	"	For reduction of hours.....
2365	Upholsters	"	For increase of wages.....
2366	Employes	"	For reduction of hours.....
2367	"	"	" "
	Gas and coke :		
2368	Firem'n & h'lpr's, gas house	"	For reduction of h'r's & w'g's
	Glass :		
2369	Boys, glassworks	"	For increase of wages.....
	Lumber :		
2370	Employes, saw-mill	"	For reduction of hours.....
	Metals and metallic goods :		
2371	Employes, iron works....	"	Against reduction of wages
2372	Employes, sheet lead and pipe works.....	"	For reduction of hours.....
2373	Employes, tinware factory	"	For reduction of hours and increase of force.....
2374	" " " "	"	For reduction of hours.....
2375	Employes, iron works.....	"	" "
2376	Employes, wire works	"	For increase of wages
2377	Puddlers, iron works	"	Against reduction of wages
	Mining :		
2378	Miners, etc., coal	Renick	For payment of wages due.
2379	Miners, coal	Huntsville	Against reduction of wages
2380	" "	"	" "
2381	" "	Hamilton	For reinstatement of one discharged employee.....

TRIES.—MISSOURI.—CONTINUED.

Ordered by labor organ- ization ...	Establish'ts Num- ber.	Days closed.	Beginning.	End.	Duration days.	Succeeded..	Employes'		Employers' loss....
							Loss ..	Assist- ance.	
No ..	1	20	May 25.....	June 14, '85.	20	No	\$700	.....
" ..	1	3	May 26.....	May 29, '85	3	"	105	.....	\$10
" ..	1	2	May 30.....	June 1, '86.	2	Partly	227	.....
Yes ..	1		May 1.....	May 6, '86.	5	No	585	.....
" ..	2	1	May 1.....	May 2, '86.	1	Yes	30	.....
" ..	120		May 1.....	Aug. 1, '86.	92	Partly	20,000	\$5,000	5,000
" ..	6		May 24.....	May 30, '86.	6	No	562	.....
Yes ..	8		Sept. 20.....	Oct. 5, '86.	15	Partly	4,158	.....	1,145
" ..	1		Sept. 20.....	Nov. 6, '86.	47	No	3,816	10	700
No ..	1	1	April 5.....	April 6, '86.	1	Yes	30	.....
Yes ..	1	7	May 23.....	June 6, '86.	14	No	150	.....	2,500
" ..	1	14	May 23.....	June 6, '86.	14	"	36	.....
" ..	42		May 23.....	June 6, '86.	14	"	1,782	.....
Yes ..	42		May 1.....	May 8, '86..	7	Yes	5,000	.....
" ..	1	21	May 3.....	May 24, '86.	21	No	2,825	.....
" ..	2		May 8.....	May 16, '86.	8	Yes	2,400	.....
" ..	20	30	May 22.....	June 21, '86	30	No	100,000	5,000	25,000
" ..	3	1	May 26.....	May 27, '86.	1	"	1,000	.....
No ..	1		May 15.....	June 1, '86.	17	"	1,897	.....	590
" ..	1	3	April 26.....	April 29, '86	3	Yes	1,000	.....
" ..	1		May 7.....	May 8, '86..	1	"	120	.....
" ..	1	10	April 21.....	May 1, '86..	10	No	8,000	.....	2,000
" ..	1		May	May '86....	7	"	60	.....
Yes ..	1	2	May 1.....	May 3, '86..	2	"	280	.....
" ..	1	19	May 1.....	May 20, '86..	19	"	720	.....
" ..	1	3	May 1.....	May 4, '86..	3	Partly	550	.....
No ..	1	2	May 17.....	May 19, '86.	2	No	250	.....
" ..	1	3	Nov. 14.....	Nov. 17, '86	3	Yes	700	.....
" ..	1	45	April 17.....	June 1, '86..	45	Partly	6,055	.....	25,000
" ..	1	109	May 1.....	Aug. 18, '86	109	Yes	8,500	250	500
" ..	1	133	May 1.....	Sept. 11, '86	133	"	14,000	250	4,000
" ..	1	8	Nov. 4.....	Nov. 12, '86	8	"	825	.....	250

*Company failed paying 80 per cent. of wages due.

II. STIKES BY YEARS AND INDUS-

No.	Industries and years.	Number of employees.					
		Before strike.			After strike.		
		Male	Female	Total	Male	Female	Total
2350	Miscellaneous :						
2351	Employes, lime kiln.....	30		30	35		35
2351	" "	58		58	58		58
	1886.						
2352	Boots and shoes:						
2352	Employes.....	35	30	65	35	30	65
	Building trades :						
2353	Carpenters.....	90		90	55		55
2354	Stair builders.....	13		13	13		13
2355	Plumbers.....	1,000		1,000	1,000		1,000
2356	Roofers, gravel and composition.....	48		48	48		48
2357	Plumbers.....	132		132	132		132
2358	"	36		36	32		32
	Food preparations :						
2359	Bakers.....	17	2	19	17	2	19
2360	"	10		10	10		10
2361	"	3		3	3		3
2362	"	135		135	135		135
	Furniture :						
2363	Cabinetmakers	500		500	500		500
2364	Carvers.....	73		73	73		73
2365	Upholsters	200		200	200		200
2366	Employes.....	2,000		2,000	2,000		2,000
2367	"	500		500	500		500
	Gas and coke :						
2368	Fireman and helpers, gas house.....	62		62	68		68
	Glass :						
2369	Boys, glassworks.....	120		120	120		120
	Lumber :						
2370	Employes, saw-mill.....	60		60	60		60
	Metals and metallic goods :						
2371	Employes, iron works.....	600		600	600		600
2372	Employes, sheet lead and pipe works.....	30		30	30		30
2373	Employes, tinware factory.....	70		70	70		70
2374	" "	20		20	20		20
2375	Employes, iron works.....	75		75	75		75
2376	Employes, wire works.....	125		125	125		125
2377	Puddlers, iron works.....	90		90	90		90
	Mining :						
2378	Miners, etc , coal.....	115		115	*		
2379	Miners, coal.....	90		90	45		45
2380	" "	90		90	35		35
2381	" "	48		48	49		49

*Company failed paying 80 per cent. of wages due.

TRIES.—MISSOURI.—CONTINUED.

Average daily wages.		Employes striking		Employees striking and involved.		New employes after strike.		Weekly working hours.	
Before strike	After strike	Daily pay.						After strike.	Before strike.
		Number	Male	Female	Total	Male	Female	Brought from other places	.....
		Male	Female	Male	Total	Male	Female	.....	.....
		Before	After	Before	Total	Male	Female	.....	.....
		Number	Male	Before	Total	Male	Female	.....	.....
\$1 50	\$1 50	30	\$1 50	\$1 50	30	28	28	60	60
1 40	1 40	58	1 40	1 40	58	1	1	60	60
2 40	\$1 00	2 50	\$1 00	7	1 64	2 08	35	.....	60 60
2 60	2 80	45	2 60	2 60	45	10	10	60	60
2 25	2 50	13	2 25	2 50	13	13	13	59	59
3 00	3 00	1,000	3 00	3 00	1000	100	100	100	54
2 08	2 08	45	2 00	2 00	45	45	45	60	60
2 69	2 69	89	3 25	3 25	89	89	89	60	54
3 06	3 06	32	3 31	3 31	32	28	28	60	60
1 65	1 00	1 65	1 00	19	1 58	1 58	17	2	60 60
1 23	1 23	10	1 23	1 23	10	10	10	4	54 54
1 00	1 00	3	1 00	1 00	3	3	3	.....	54 54
1 10	1 10	135	1 10	1 10	135	42	42	42	54 54
1 75	2 25	500	1 75	2 25	500	50	50	50	59
2 15	2 15	73	2 15	2 15	73	73	73	.....	60 60
2 00	2 33	200	2 00	2 33	200	50	50	50	59 59
2 00	2 00	2,000	2 00	2 00	2000	100	100	.....	59 59
2 00	2 00	500	2 00	2 00	500	500	500	.....	59 59
2 54	2 54	50	2 53	2 53	50	32	32	.....	84 84
2 78	2 83	45	75	88	120	.....	.....	.....	59 59
2 00	2 00	60	2 00	2 00	60	.....	.....	.....	66 66
1 75	150	600	1 75	1 50	600	600	600	.....	59 59
1 67	1 67	10	1 67	1 67	10	10	10	10	60 60
2 60	2 00	70	2 00	2 00	70	70	70	.....	60 60
2 10	2 10	20	2 10	2 10	20	20	20	.....	60 60
2 50	2 50	75	2 50	2 50	75	75	75	.....	59 53
1 00	1 00	125	1 00	1 00	125	125	125	.....	59 59
2 75	2 75	90	2 75	2 75	90	10	10	10	48 48
1 35	*	1 15	1 35	*	115	115	115	.....	60 *
1 75	1 75	1 75	1 75	90	90	10	10	10	60 60
2 00	2 50	80	2 00	2 50	90	90	90	.....	54 54
2 46	2 46	75	2 64	2 64	48	48	1	1	54 54
		39							

I. STRIKES BY YEARS AND INDUS-

No.	Industries and years.	Locality.	Cause or object.
1886.			
2382	Printing and publishing: Compositors.....	St. Louis	Against employment of non-union men.....
2383	, ,	Kansas City	For increase of wages.....
Railroad cars:			
2384	Railroad cars: Employes, car works.....	St. Louis	In sympathy with strike elsewhere
2385	Rope and bagging: Employes, bagging factory	"	For reduction of hours and increase of wages
2386	Stone quarrying and cutting: Quarrymen	St. Louis	For increase of wages.....
Tobacco :			
2387	Cigarmakers.....	"	Against reduction of wages.
2388	Stemmers and wrappers...	"	For increase of wages.....
2389	Cigarmakers.....	"	Against increase of hours and reduction of wages..
2390	"	"	Against reduction of wages.
Transportation :			
2391	Transportation: Employes, R. R. company	"	In sympathy with strike elsewhere
2392	Switchmen	Kansas City	For increase of wages.....
2393	Teamsters	St. Louis	In sympathy with strike elsewhere
2394	Firemen, railroad.....	"	In sympathy with strike elsewhere
2395	Switchmen	"	In sympathy with strike elsewhere
2396	Truckmen, railroad.....	Kansas City	For increase of wages.....
2397	Trackmen, railroad.....	"	" "
2398	" "	"	" "
2399	" "	"	" "
Woolen goods:			
2400	Employes, planing mill.....	St. Louis	For reduction of hours.....
2401	" "	"	" "
2402	" "	"	" "
2403	" "	"	" "
2404	" "	"	" "
2405	" "	"	" "
Miscellaneous:			
2406	Miscellaneous: Employes, lard & soap fac'y	St. Louis	For reduction of hours.....
2407	Employes, sugar refinery..	"	For increase of wages.....

STRIKES—MISSOURI.—CONTINUED.

Ordered by labor organization.....	Establish'ts		Beginning.....	End.....	Duration days.....	Succeeded	Employees'		Employers' loss.....
	Number..	Days closed					Loss	Assist-ance	
Yes..	1	2	May 29.....	May 31, '86.	2	Yes.....	\$144.....		\$100
" "	1	Sept. 27.....	Nov. 27, '86	61	" "	1,575	\$80		30
Yes..	1	4	April 24....	Apr. 28, '86	4	No ...	2,160.....		4,000
No...	1	7	May.....	May, '86...	7	Partly..	882.....		500
Yes..	2	8	May 8.....	May 16, '86.	8	Yes....	2,000.....		1,000
" "	1	21	Jan. 11....	Feb. 1, '86.	21	" "	184.....	60	
No ..	1	May 5.....	May 8, '86.	3	" "	657			250
" "	1	Aug. 1.....	Aug. 2, '86.	1	Partly ..	32.....			
Yes..	1	7	Nov. 22....	Nov. 29, '86	7	Yes....	105.....	40	50
Yes ..	1	March 6....	May 4, '86.	59	No	572,480	50,094	2,858,723	
" "	9	March 22....	Mar. 25, '86	3	Yes....	1,146			500
" ..	1	13	March 30....	Apr. 12, '86	13	No	7,000.....		25,000
" ..	1	April 7.....	Apr. 8, '86.	1	" "	129			500
" ..	1	April 7.....	Apr. 8, '86.	1	" "	116			500
No ..	1	April 22....	Apr. 23, '86	1	" "	34			
" ..	1	1 May 4.....	May 5, '86.	1	" "	22			
" ..	1	1 May 4.....	May 5, '86.	1	Partly ..	25			100
" ..	1	May 4.....	May 5, '86.	1	" ..	13			20
Yes..	1	May 19....	May 29, '86.	10	No	550	(a) 270		300
" ..	5	May 20....	June 1, '86.	12	" ..	3,660	(a)	11,100	
" ..	1	May 20....	June 2, '86.	13	" ..	565	(a)		350
" ..	3	May 20....	June 4, '86.	15	" ..	4,777	(a)	14,400	
" ..	2	May 20....	June 7, '86.	18	" ..	2,587	(a)		800
" ..	1	May 20....	June 13, '86	24	" ..	2,900	(a)		2,500
No ..	1	May 5.....	May 12, '86.	7	No	1,466			300
" ..	1	May 13.....	May 20, '86.	7	" ..	360			

(a) Assistance for whole strikes.

II. STRIKES BY YEARS AND INDUS-

No.	Industries and years.	Number of employees.					
		Before strike.			After strike.		
		Male...	Female...	Total...	Male...	Female...	Total...
	Printing and publishing:						
2382	Compositors.....	36		36	36		
2383	"	19	2	21	19	2	21
	Railroad cars:						
2384	Employes, car works.....	500		500	500		500
	Rope and bagging:						
2385	Employes, bagging factory.....	25	150	175	25	150	175
	Stone quarrying and cutting:						
2386	Quarrymen.....	150		150	150		150
	Tobacco:						
2387	Cigarmakers	9		9	9		9
2388	Stemmers and wrappers	100	100	200	100	100	200
2389	Cigarmakers	360	310	670	360	310	670
2390	"	10		10	10		10
	Transportation:						
2391	Employes, railroad company.....	13,393		13,393	12,500		12,500
2392	Switchmen	178		178	178		178
2393	Teamsters	250		250	250		250
2394	Firemen, railroad.....	200		200	200		200
2395	Switchmen	218	18	236	218	18	236
2396	Truckmen, railroad.....	58		58	58		58
2397	Trackmen, railroad.....	18		18	18		18
2398	"	20		20	20		20
2399	"	12		12	12		12
	Wooden goods:						
2400	Employes, planing mill.....	93		93	86		86
2401	"	238		238	232		232
2402	"	45		45	52		52
2403	"	235		235	199		199
2404	"	106		106	106		106
2405	"	94		94	69		69
	Miscellaneous:						
2406	Employes, lard and soap factory.....	186	26	212	186	26	212
2407	Employes, sugar refinery.....	60		60	60		60

TRIES—MISSOURI.—CONTINUED.

Average daily wages.				Employes striking			Employees striking and involved.		New employees after strike.		Weekly working hours.	
Before strike		After strike.										
				Daily pay.								
				Number.....	Before.	After..	Total	Male..	Total	Male..	Before	strike.
				Male..	Female.	Male..	Female.	Male..	Female.	Male..	Before	strike.
\$2 00	2 50	\$2 00	2 50	36	\$2 00	\$2 00	36	19	36	12	59	59
1 08	1 08	1 08	1 08	500	1 08	1 08	500	2	500	1	59	58
1 40	75	1 60	72	170	81	81	20	150	170	50	60	60
2 25	.....	2 75	.....	150	2 25	2 75	150	.....	150	.....	.....	59
1 75	95	1 75	1 24	9	1 75	1 75	9	.....	9	.....	.....	60
1 10	84	1 12	84	200	1 10	1 10	100	100	200	.....	.....	59
1 75	.....	1 75	.....	28	1 16	1 45	28	.....	28	.....	.....	48
2 01	.....	2 00	.....	10	1 75	1 75	10	.....	10	.....	.....	48
2 15	.....	2 43	.....	5000	2 00	2 00	9812	9812	200	200	1600	60
2 50	.....	2 50	.....	178	2 15	2 43	178	.....	178	.....	.....	70
2 34	.....	2 34	.....	250	2 50	2 50	250	.....	250	.....	.....	59
1 68	93	1 68	93	55	2 00	2 00	55	.....	55	47	47	68
1 56	.....	1 56	.....	69	2 00	2 00	69	.....	69	60	60	70
1 25	.....	1 25	.....	22	1 40	1 40	22	.....	22	12	12	60
1 25	.....	1 40	.....	18	1 25	1 25	18	.....	18	.....	.....	65
1 15	.....	1 25	.....	20	1 25	1 40	20	.....	20	.....	.....	65
1 76	.....	1 76	.....	12	1 15	1 25	12	.....	12	.....	.....	65
1 87	.....	1 92	.....	28	2 18	2 18	28	.....	28	.....	.....	60
1 83	.....	1 83	.....	173	1 87	1 92	173	.....	173	.....	.....	60
1 81	.....	1 80	.....	24	2 14	2 14	24	.....	24	7	7	60
1 89	.....	1 89	.....	203	1 81	1 81	203	.....	203	18	18	60
1 76	.....	1 76	.....	86	1 89	1 89	86	.....	86	30	30	60
1 77	73	1 95	80	79	1 76	1 76	79	.....	79	14	14	60
1 00	.....	1 00	.....	60	1 00	1 00	60	.....	60	60	60	59

STRIKES—ALL INDUS-

[From Advance Sheets of Third Annual]

Industry.	Ordered by organizat'n.		Establishments.			Average days closed.....
	Yes.	No.	No.	No. closed...	Aggregate days closed..	
Boots and shoes.....	14	1	15	14	215	15.4
Brick.....		4	4	4	12	3.0
Building trades.....	687	10	697	421	3,060	7.3
Clothing.....	5	3	8	1	59	59.0
Cooperage.....	26		26	26	196	7.5
Food preparations.....	44	1	45	3	22	7.3
Furniture.....	68		68	24	624	26.0
Gas and coke.....		1	1			
Glass.....	1	1	2	2	163	81.5
Leather and leather goods.....	12	1	13	2	10	5.0
Lumber.....		10	10	9	126	14.0
Machines and machinery.....	1	1	2	2	20	10.0
Metals and metallic goods.....	39	5	44	22	823	37.4
Mining.....	8	32	40	40	2,248	56.2
Printing and publishing.....	6	1	7	2	9	4.5
Public ways construction.....		1	1	1	7	7.0
Railroad cars.....	2	1	3	3	6	2.0
Rope and bagging.....	1	1	2	1	7	7.0
Shipbuilding, etc.....	1		1	1	61	61.0
Stone quarrying and cutting.....	2	2	4	4	23	5.8
*Telegraphy.....						
Tobacco.....	44	2	46	38	1,386	36.4
Transportation.....	27	20	47	20	115	4.0
Wooden goods.....	13		13			
Miscellaneous.....		5	5	3	24	8.0
Total.....	1,001	103	1,104	652	9,215	14.1

TRIES FOR ALL YEARS.

Report of United States Bureau of Labor.]

Duration.—(Days.)	Results.			Employes'			Employers' loss.
	Average.	Suc- ceeded.	Partly succeed- ed.	Failed.	Loss.	Assistance.	
222	14.8	5	1	9	\$17,376	\$500	\$16,500
12	3.0	4			1,485		
20,748	29.8	378	138	181	95,907	7,250	27,345
234	29.3	5		3	1,198	210	400
196	7.5	1	25		8,700	1,500	3,100
617	13.7	1		44	1,998		2,500
934	13.7	44		24	111,225	5,000	25,000
17	17.0			1	1,897		590
163	81.5	2			28,400	15,000	
164	12.6	12	1		7,247	2,000	1,000
127	12.7	1		9	9,176		4,000
20	10.0	1	1		12,125	1,250	65,000
1,476	33.5	11	2	31	416,724	65,640	681,000
2,248	56.2	11	19	10	225,390	6,345	63,350
78	11.1	6		1	2,117	80	430
7	7.0		1		124		
6	2.0	2		1	2,860		4,000
15	7.5	1	1		1,082	50	500
61	61.0	1			4,500	1,000	1,000
23	5.8	3		1	2,503		1,000
1,683	36.6	45	1		19,879	2,828	6,050
498	10.6	26	3	18	701,728	60,094	3,137,448
188	14.5			13	14,939	270	29,450
38	7.6			5	2,806		310
29,775	27.0	560	103	351	\$1,691,386	\$169,017	\$4,069,973

STRIKES—ALL INDUSTRIES

Industry.	Number of employes.					
	Before strike.			After strike.		
	Male . . .	Female . . .	Total . . .	Male . . .	Female . . .	Total . . .
Boots and shoes	411	165	576	345	120	465
Brick	300	.....	300	300	.....	300
Building trades	5,345	.....	5,345	5,306	.....	5,306
Clothing	20	235	255	20	265	285
Cooperage	570	.....	570	550	.....	550
Food preparations	165	2	167	165	2	167
Furniture	3,273	.....	3,273	3,273	.....	3,273
Gas and coke	62	.....	62	68	.....	68
Glass	220	.....	220	220	.....	220
Leather and leather goods	245	.....	245	245	.....	245
Lumber	616	.....	616	624	.....	624
Machines and machinery	894	.....	894	888	.....	888
Metals and metallic goods	6,359	.....	6,359	4,787	.....	4,787
Mining	3,448	.....	3,448	3,110	.....	3,110
Printing and publishing	149	8	157	149	8	157
Public ways construction	18	.....	18	18	.....	18
Railroad cars	850	.....	850	850	.....	850
Rope and bagging	25	200	225	25	200	225
Shipbuilding, etc.	90	.....	90	90	.....	90
Stone quarrying and cutting	242	.....	242	242	.....	242
Telegraphy . . . . .	.....	.....	.....	.....	.....	.....
Tobacco	857	424	1,281	869	425	1,294
Transportation	33,571	18	33,589	32,678	18	32,696
Wooden goods	811	.....	811	744	.....	744
Miscellaneous	434	26	460	439	26	465
Total	58,975	1,078	60,053	56,005	1,064	57,069

FOR ALL YEARS.—CONTINUED.

Employees striking.	Employees striking and in- volved.			New employes after strike.			Brought fr'm other places.
			Total			Total	
	Male...	Female...	...	Male...	Female...	...	
392	381	130	511	36	15	51	.....
300	300	.....	300	.....	.....	.....	.....
5,250	5,250	.....	5,250	178	.....	178	.....
37	17	20	37	9	50	59	.....
570	570	.....	570	.....	.....	.....	.....
167	165	2	167	46	.....	46	.....
3,273	3,273	.....	3,273	200	.....	200	.....
50	50	.....	50	32	.....	32	.....
70	220	.....	220	.....	.....	.....	.....
245	245	.....	245	25	.....	25	25
185	575	.....	575	24	.....	24	.....
888	888	.....	888	.....	.....	.....	.....
4,905	6,269	.....	6,269	627	.....	627	627
3,043	3,438	.....	3,438	580	.....	580	419
144	136	8	144	52	1	53	.....
18	18	.....	18	10	.....	10	.....
850	850	.....	850	50	.....	50	.....
220	20	200	220	.....	.....	.....	.....
90	90	.....	90	.....	.....	.....	.....
242	242	.....	242	.....	.....	.....	.....
447	524	114	638	42	1	43	.....
12,450	17,548	.....	17,548	4,169	.....	4,169	2,925
593	593	.....	593	69	.....	69	.....
367	397	.....	397	189	.....	189	.....
34,816	42,059	474	42,533	6,338	67	6,405	4,144

I. LOCKOUTS

(From Advance Sheets of Third An

Industries and Years.	Locality.	Cause or Object.
1883.		
Glass: Employes, bottle glass wks	St. Louis	To enforce reduction of wages..
1884.		
Glass: Employes, bottle glass wks Emloyees, flint glass works	St. Louis "	To enforce reduction of wages.. Refusal of employes to work during July and August.....
1885.		
Glass: Employes, bottle glass wks	St. Louis	To enforce reduction of wages..
Machines and machinery: Employes, R. R. mc'h shops	Moberly	*To reduce force
1886.		
Glass: Employes	Crystal City	Against union men
Blowers, flint glass works	St. Louis	" " "

* Employes claim it was to get rid of men who had participated in former strikes.

—MISSOURI.

(Annual Report, U. S. Bureau of Labor.)

Establish'ts Ordered by la- bor organiza- tion	Days closed Num- ber	Beginning ..	End.....	Duration days	Succeeded ..	Employes'		Employers' loss
						Loss ..	Assist- ance.	
No....	3	182 Sept. 1.....	March 1, '84	182	No.....	\$129,033	\$10,000	\$17,000
No....	3	181 Sept. 1.....	March 1, '85	181	No.....	78,573	25,254	20,000
No....	1	385 "	Sept. 20, '85	385	Yes....	40,000	1,641	10,000
No....	3	181 Sept. 1.....	March 1, '86	181	No.....	72,887	27,808	.....
No....	1.....	June 16....	Sept. 7, '85.	83	Yes....	26,352	5,000	75,000
No....	1.....	March 1....	Mar. 31, '86.	30	Yes....	20,000	500	2,000
No....	1	14 Nov. 26....	Dec. 10, '86.	14	Yes....	1,912	264	3,000

II. LOCKOUTS

(From Advance Sheets of Third An

Industries and Years.	Number of Employees.					
	Before lockout.			After lockout.		
	Male . . .	Female . . .	Total . . .	Male . . .	Female . . .	Total . . .
1883.						
Glass :						
Employees, bottle glass works	573	.....	573	573	.....	573
1884.						
Glass :						
Employees, bottle glass works.....	438	.....	438	430	.....	430
Employees, flint glass works	102	.....	102	100	.....	100
1885.						
Glass :						
Employees, bottle glass works.....	375	.....	375	375	.....	375
Machines and Machinery :						
Employees, railroad machine shops	444	.....	444	300	.....	300
1886.						
Glass :						
Employees.....	600	.....	600	600	.....	600
Blowers, flint glass works....	113	.....	113	66	.....	66

—MISSOURI.

(Annual Report, U. S. Bureau of Labor.)

Average daily wages.		Empl's locked out		Employees locked out and involved.		New employees after lockout.		Workin'g hours.	
Before lock-out.	After lock-out.		Daily pay.					After lockout	lockout
		Number		After		Total		Before lockout	lockout
		Female		Before		Female		Total	
		Male		Male		Male		Male	
\$2.64	\$2.64	573	\$2.64	\$2.64	573	573	573	60	60
2.70	2.70	438	2.70	2.70	438	438	438	60	60
1.67	1.67	102	1.67	1.67	102	102	102	60	60
2.70	2.70	375	2.70	2.70	375	375	375	60	60
1.50	1.70	444	1.50	1.70	444	444	100	100	40
3.00	3.00	300	3.00	3.00	300	300	300	59	59
1.41	1.10	113	1.41	1.10	113	113	113	54	54

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